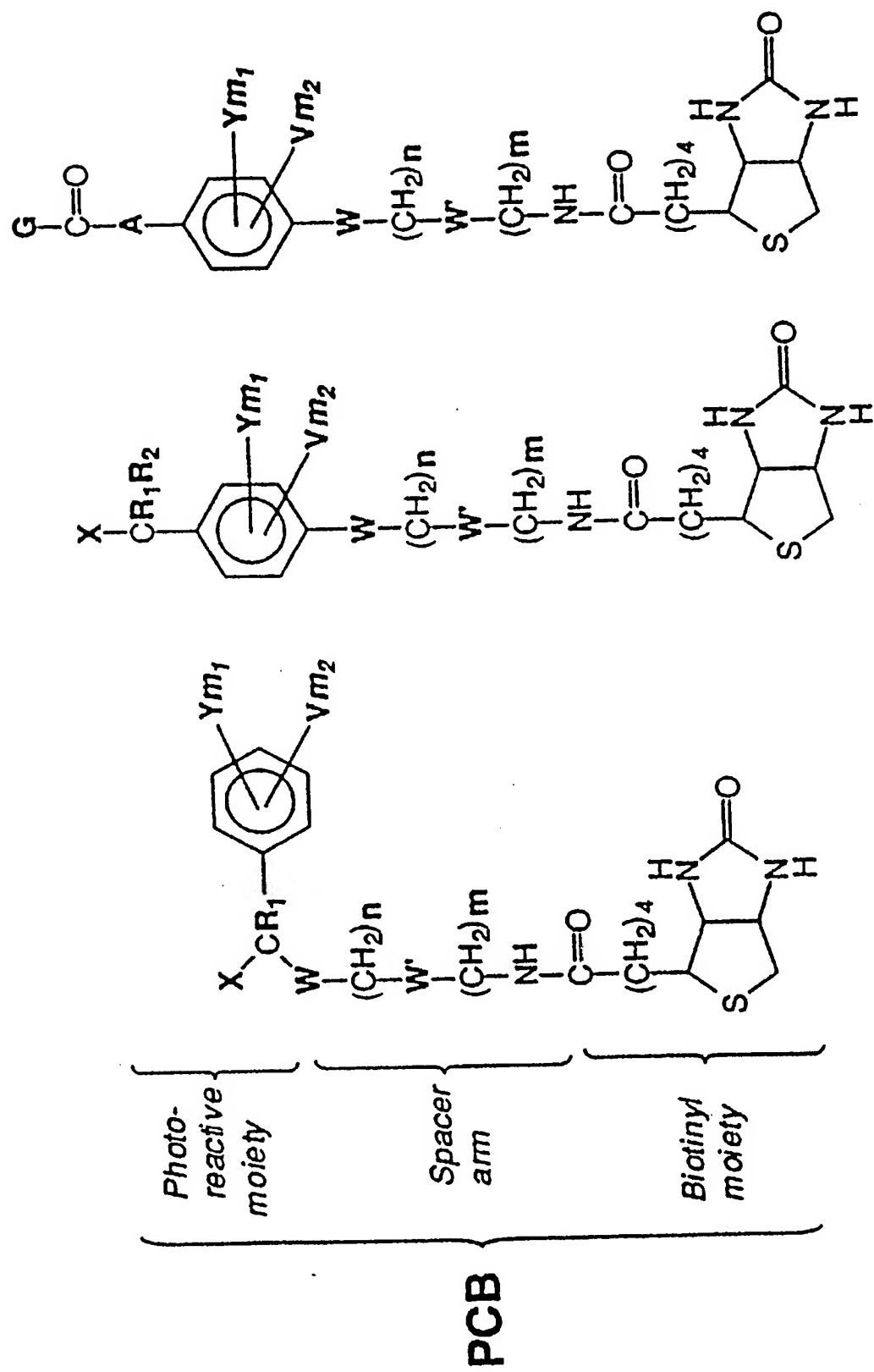


**Figure 1**



**Figure 2**

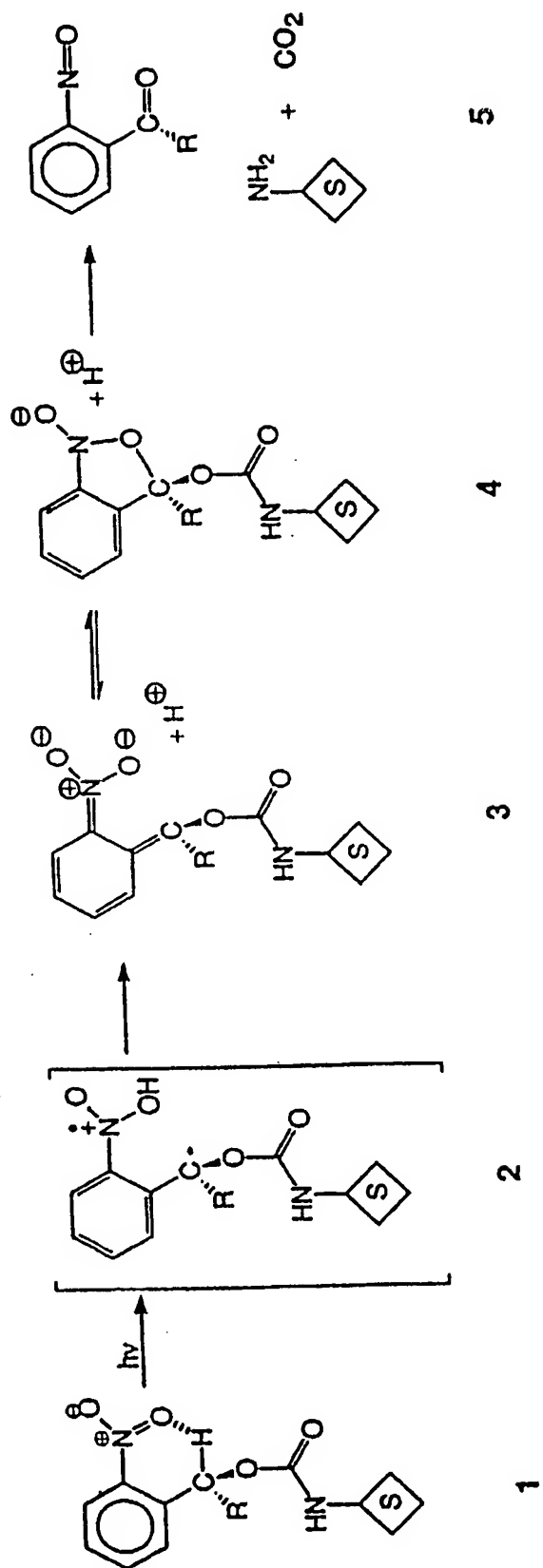


Figure 3

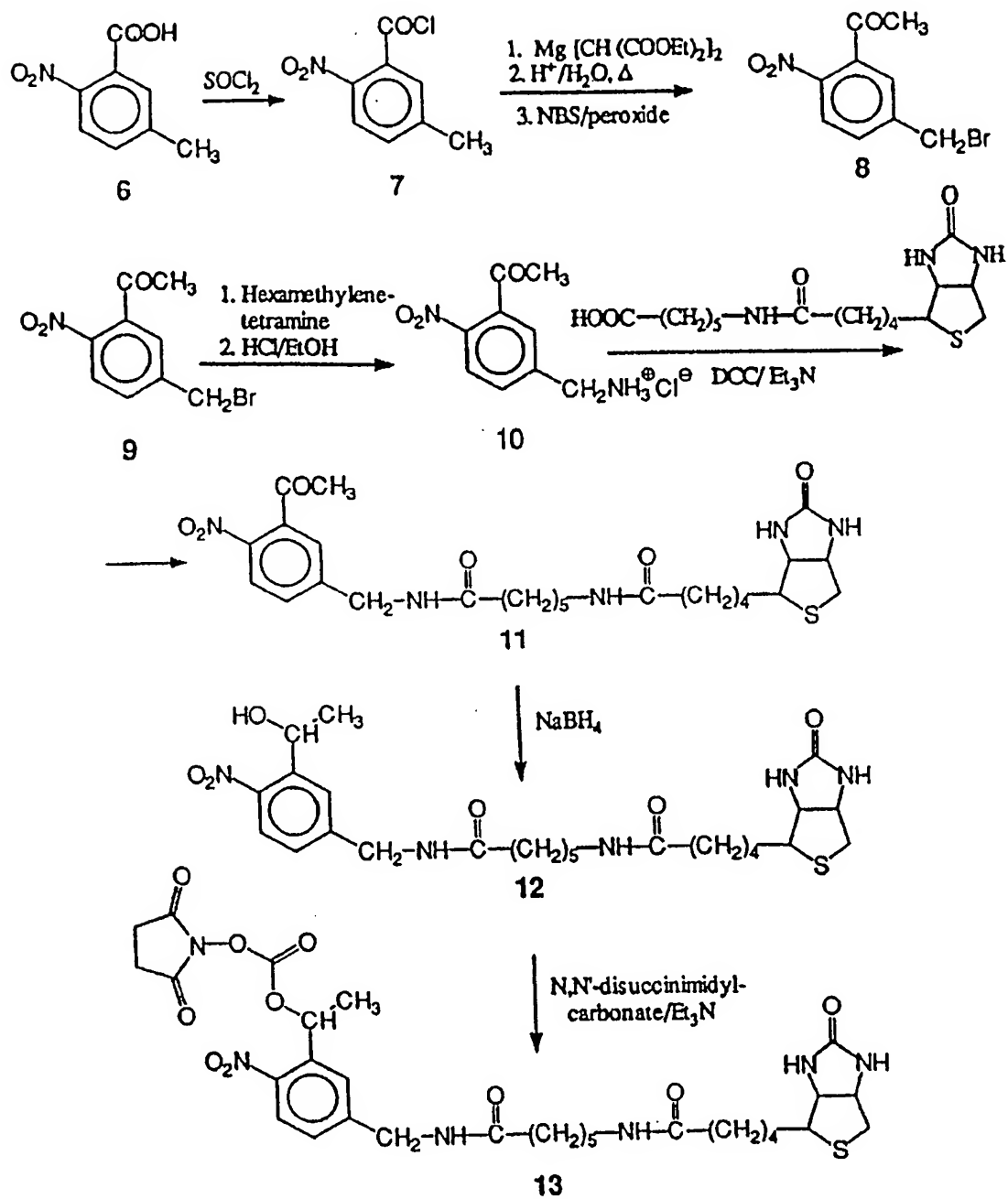
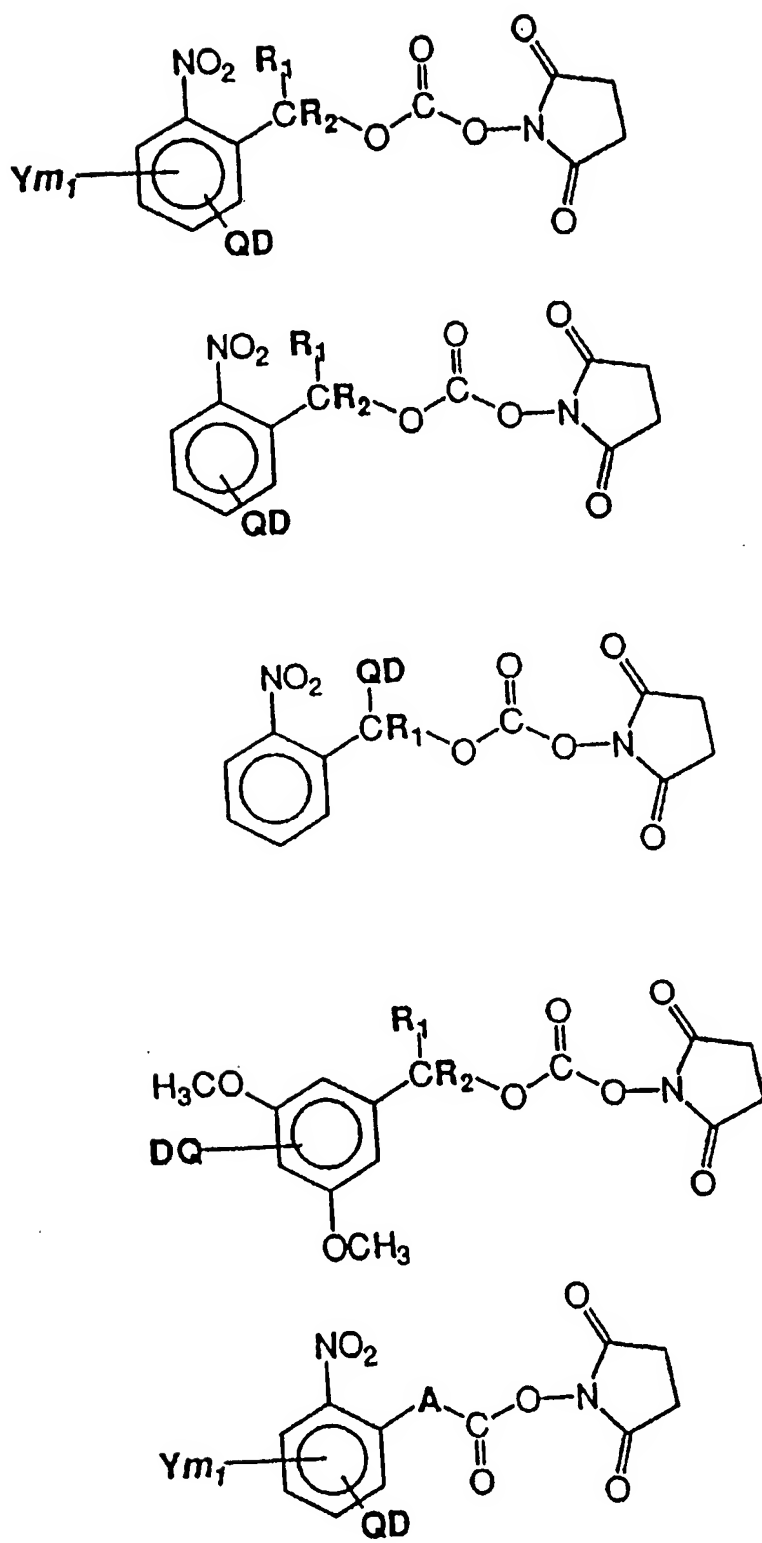
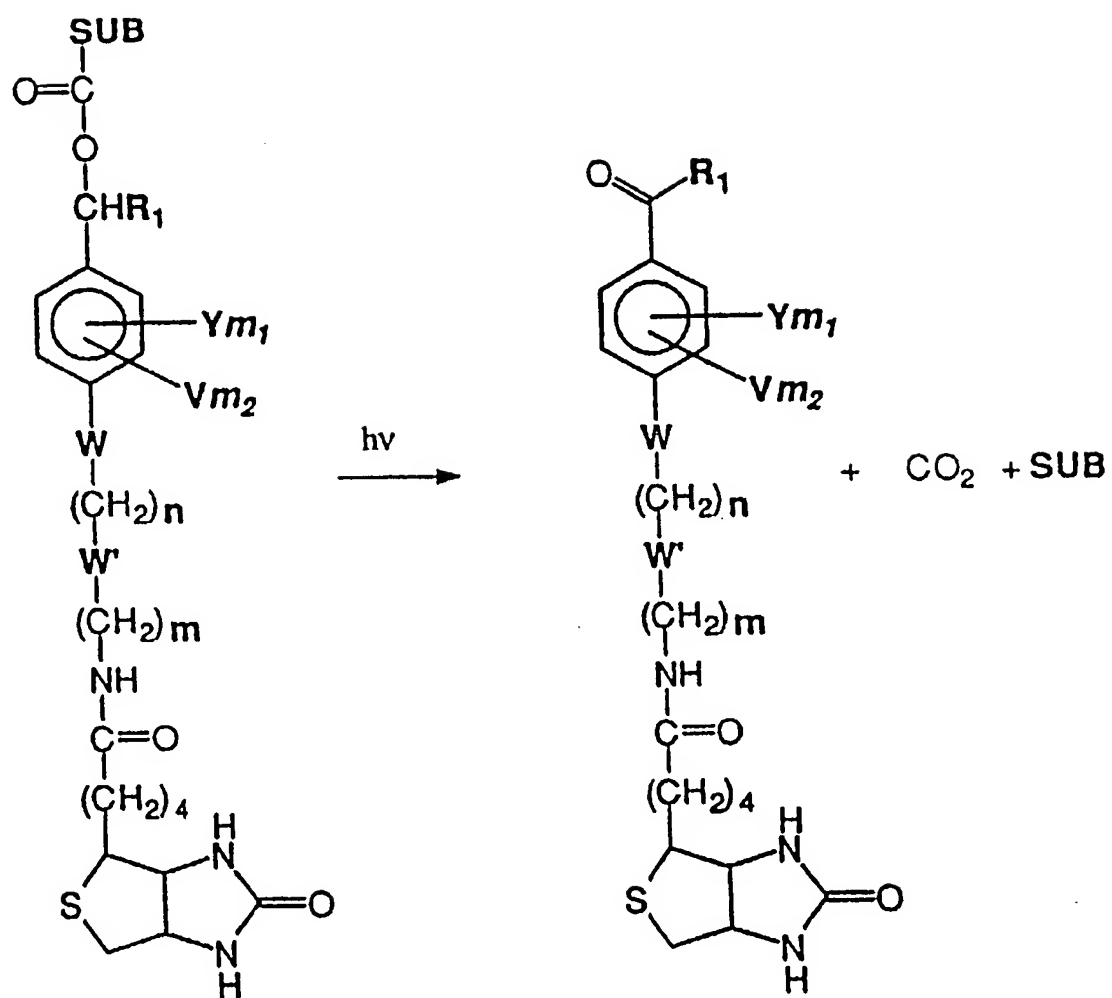


Figure 4



**Figure 5**



**Figure 6**

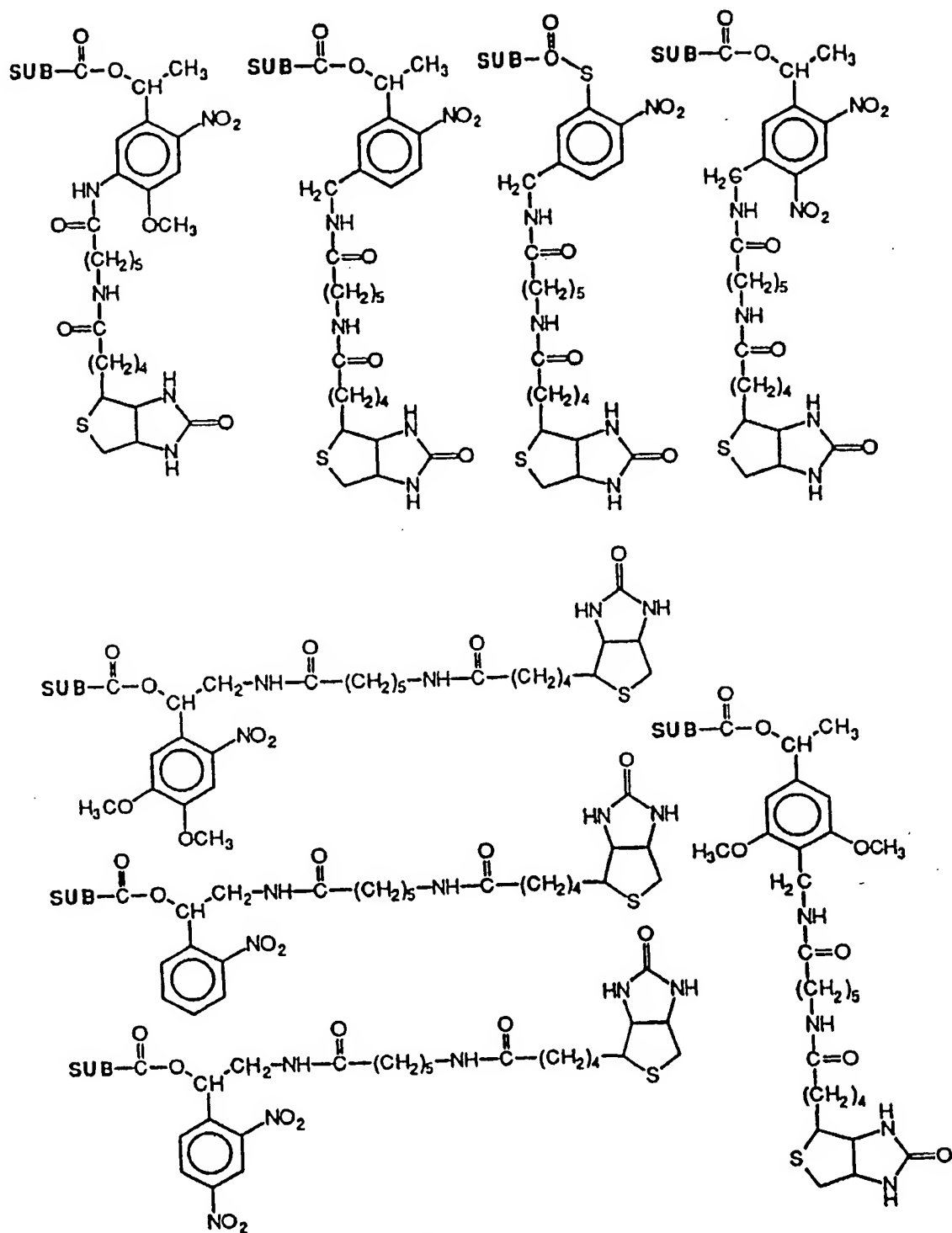
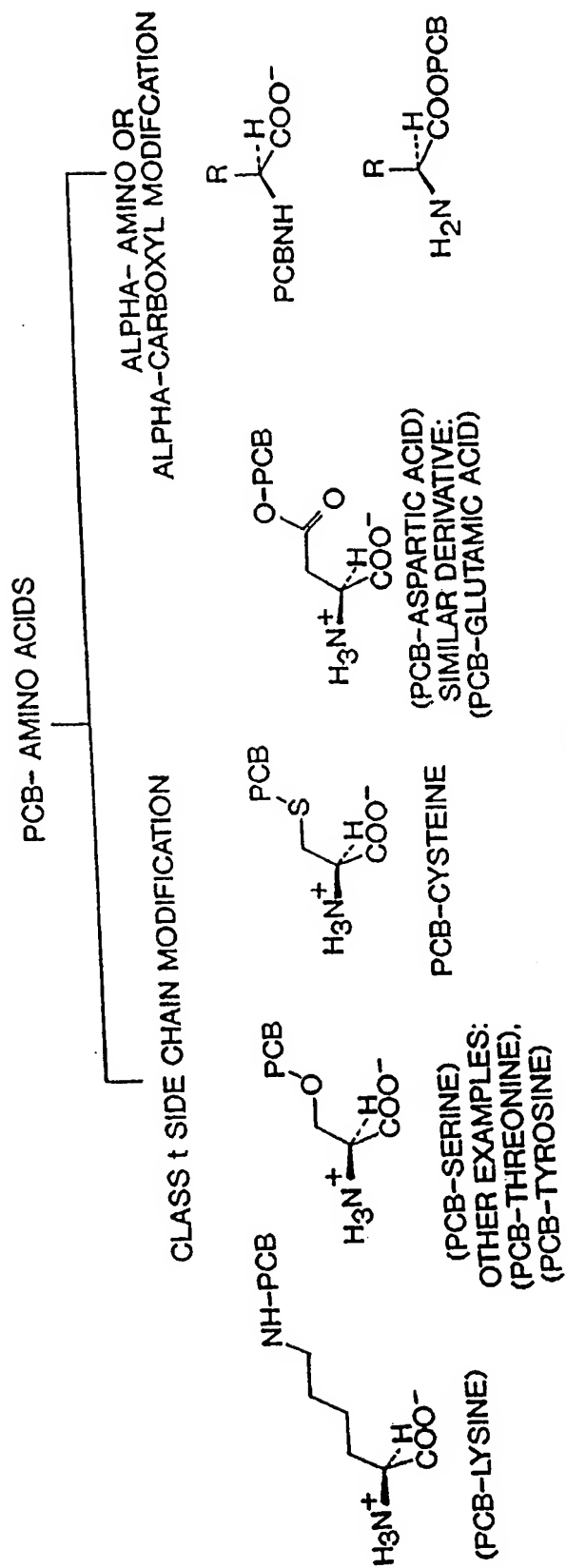


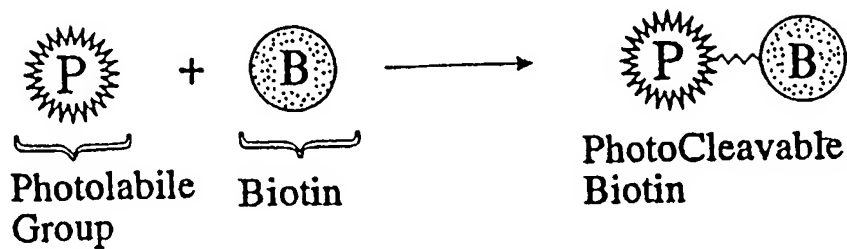
Figure 7



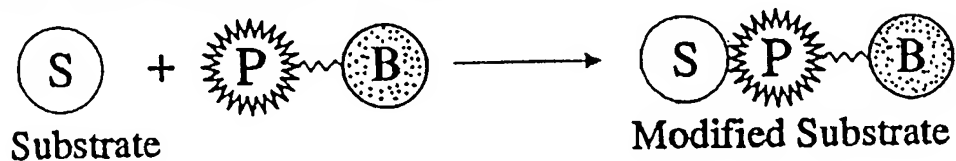
**Figure 8**



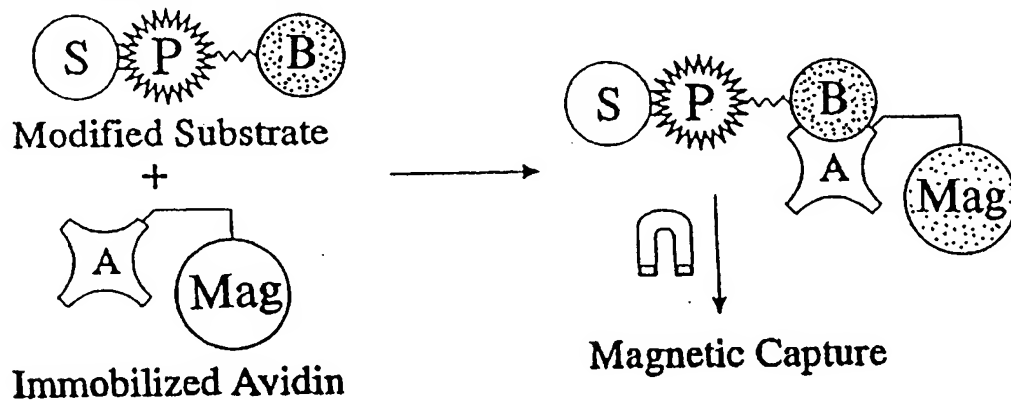
### Step 1: Synthesis of Photocleavable Biotin



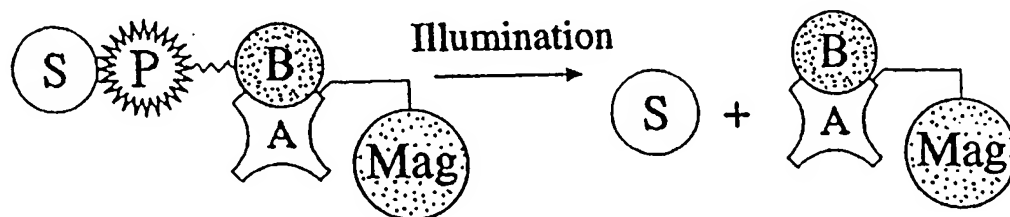
### Step 2: Modification of the substrate by Photocleavable Biotin



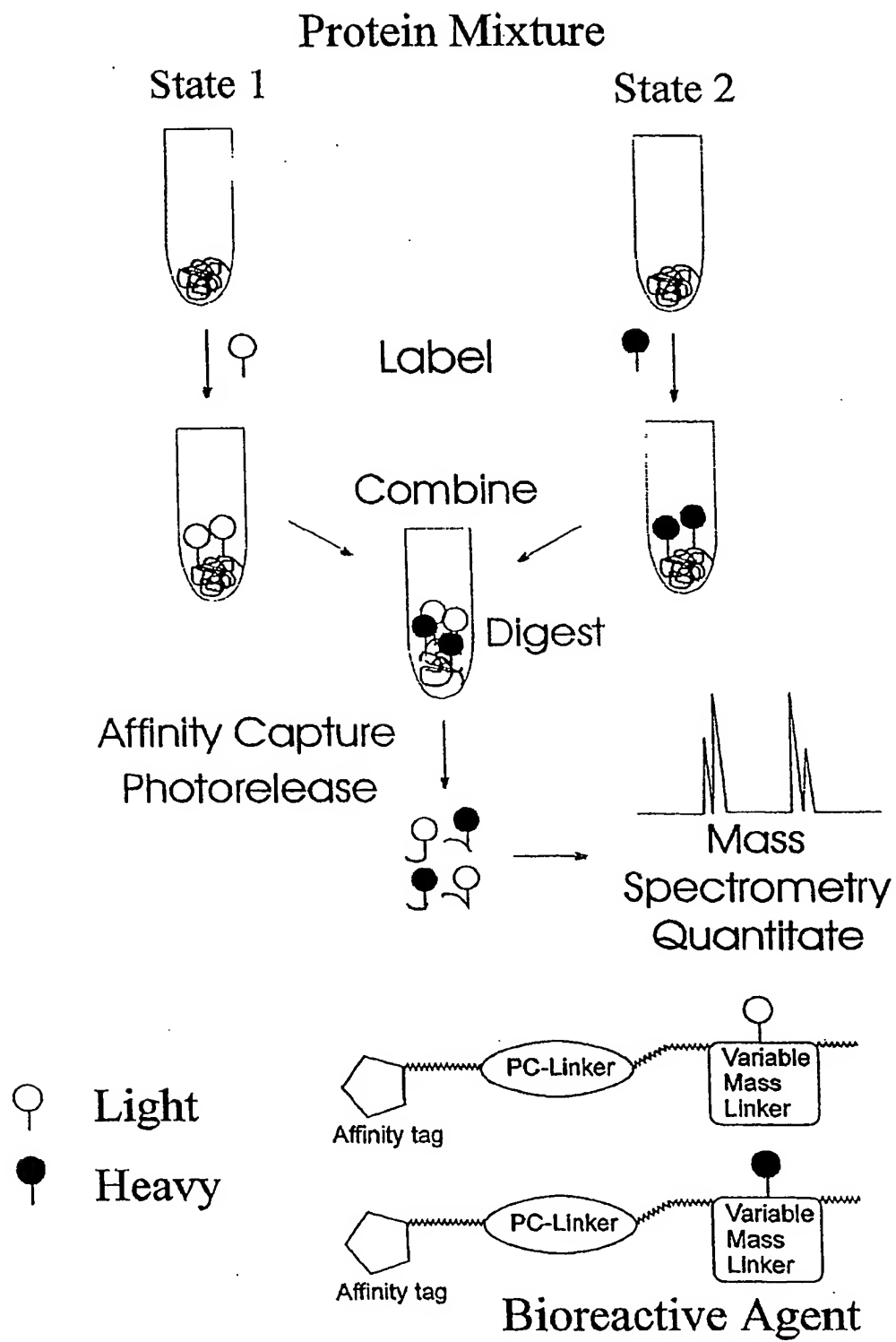
### Step 3: Isolation of the Modified Substrate using Avidin



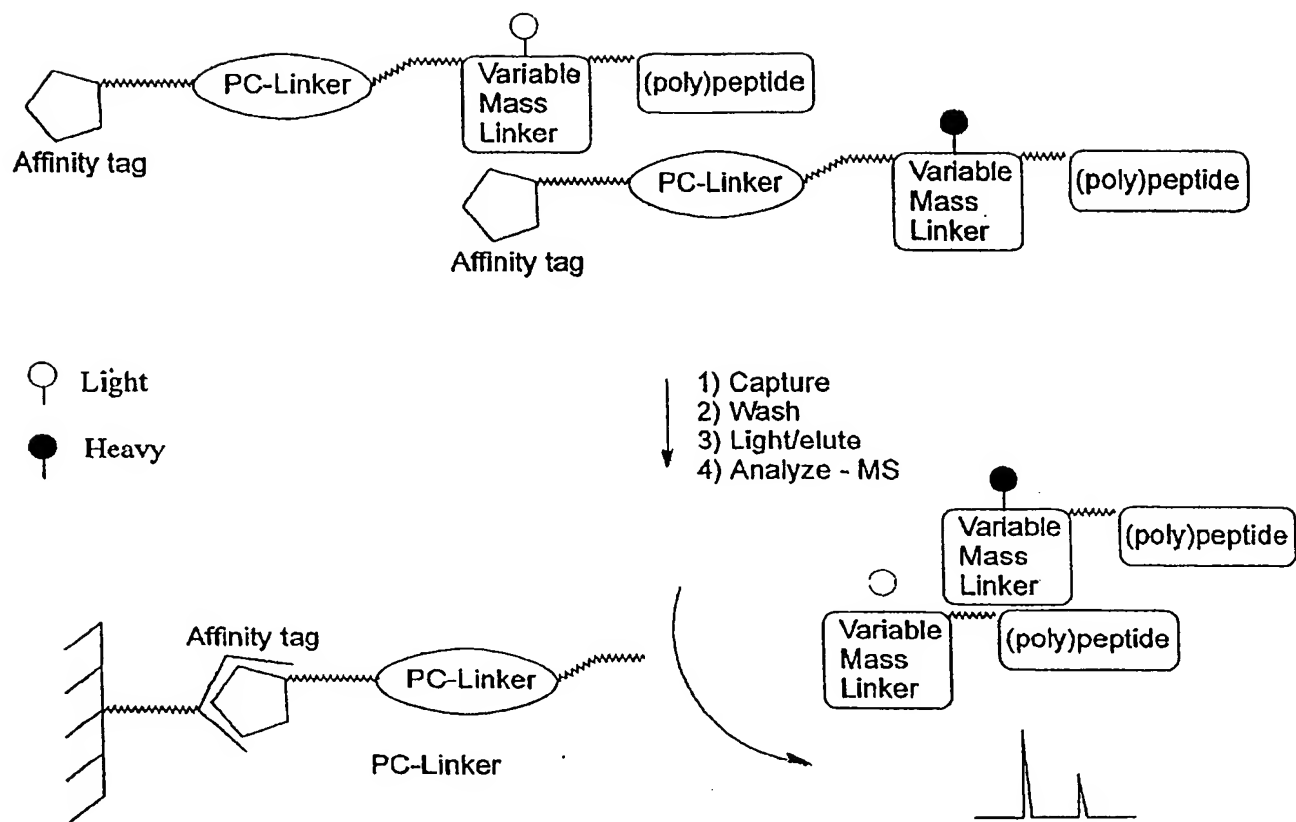
### Step 4: Detachment of Pure Substrate



**Figure 9**



**Figure 10**



**Figure 11**



## Figure 12

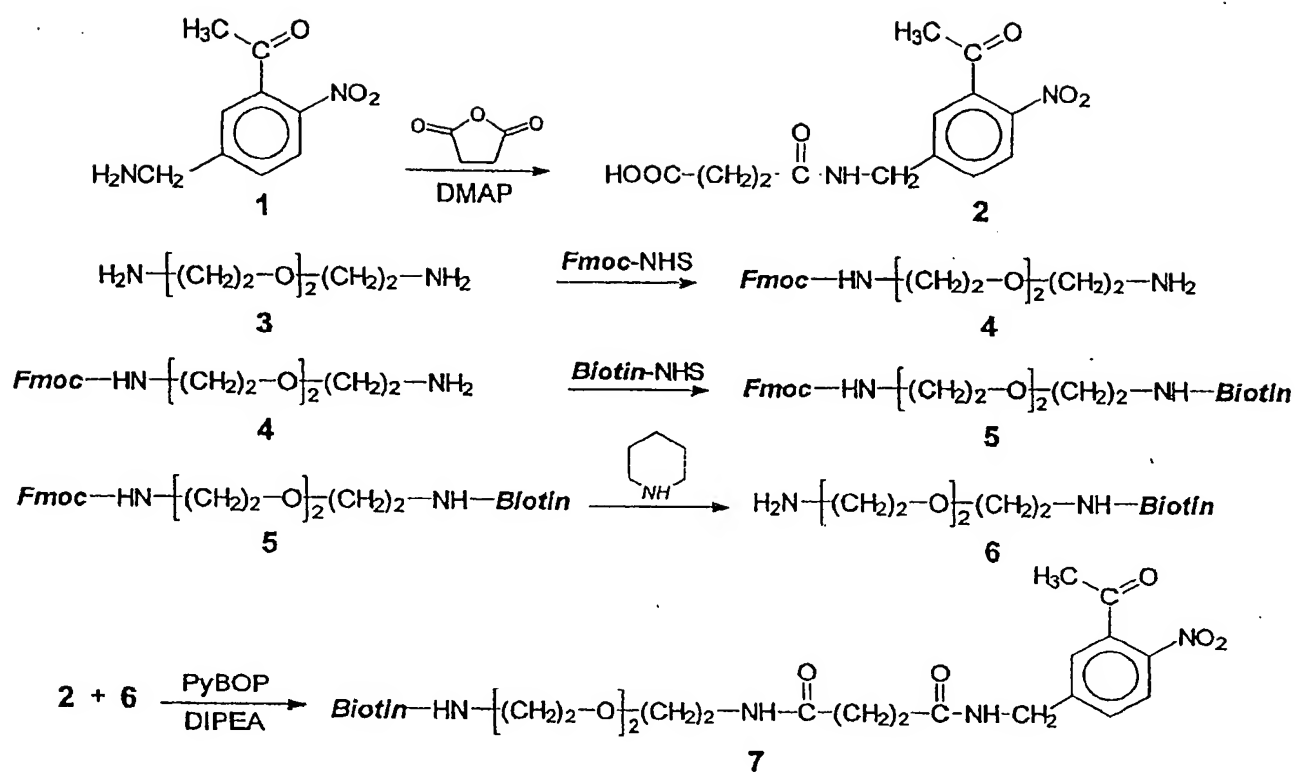
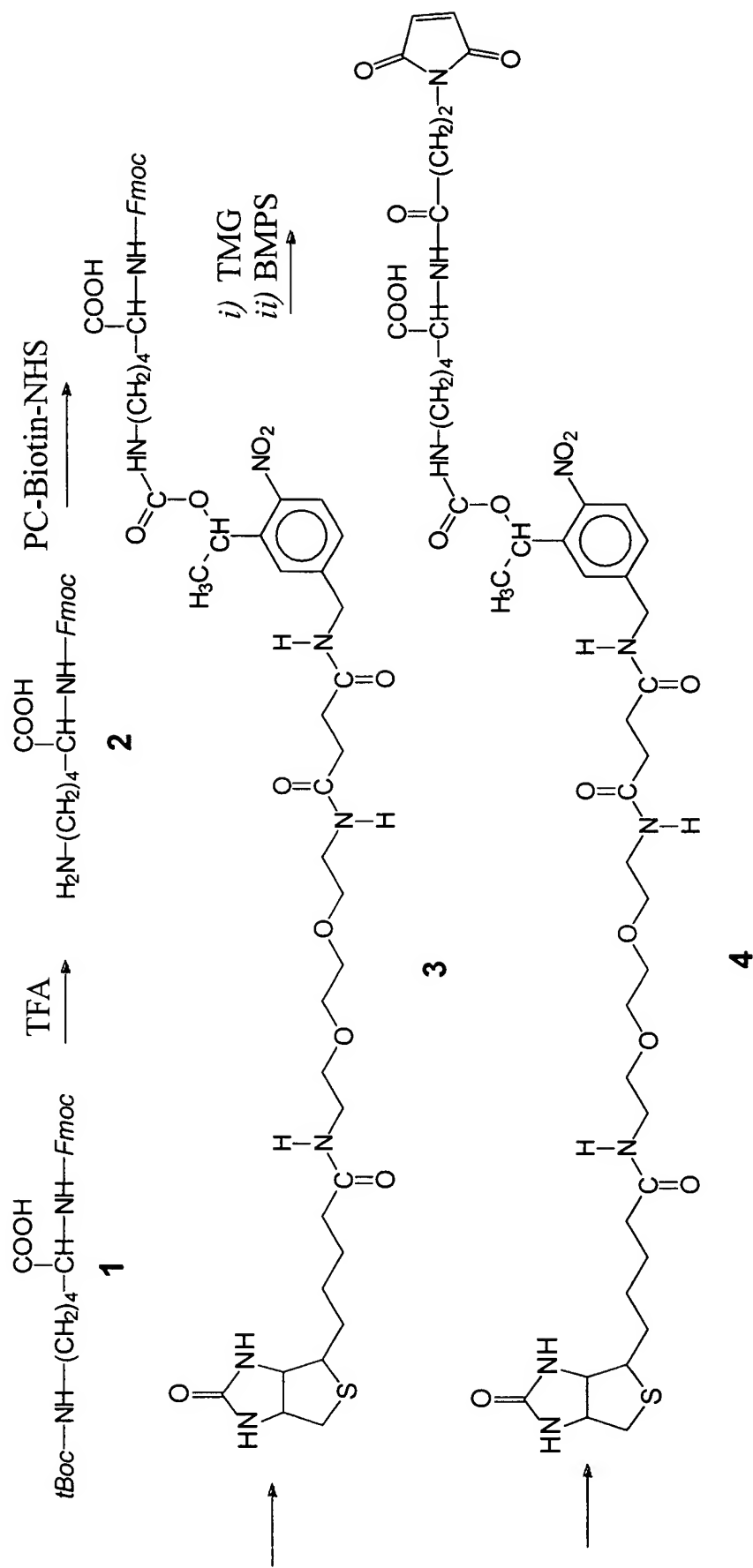
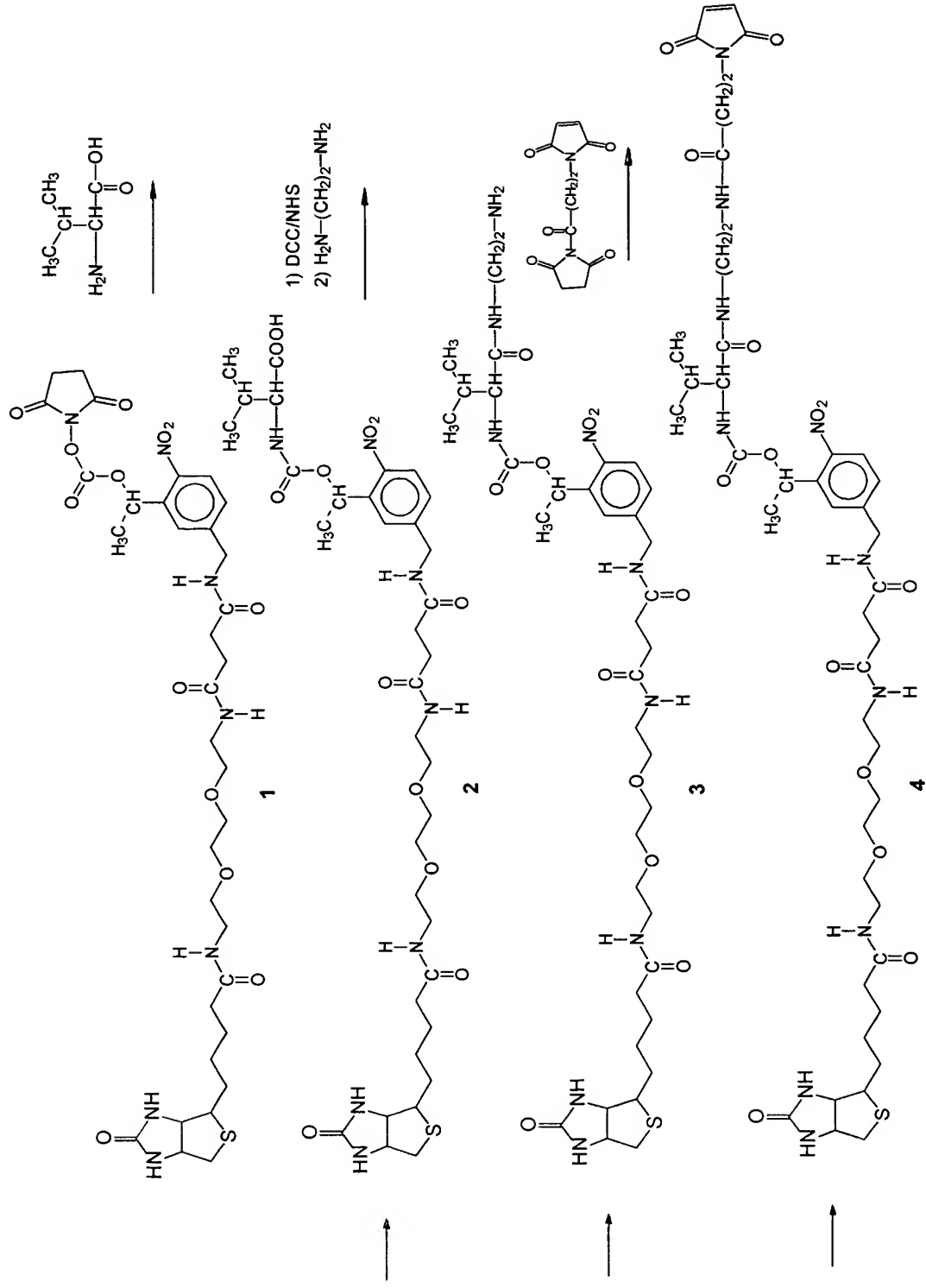


Figure 13

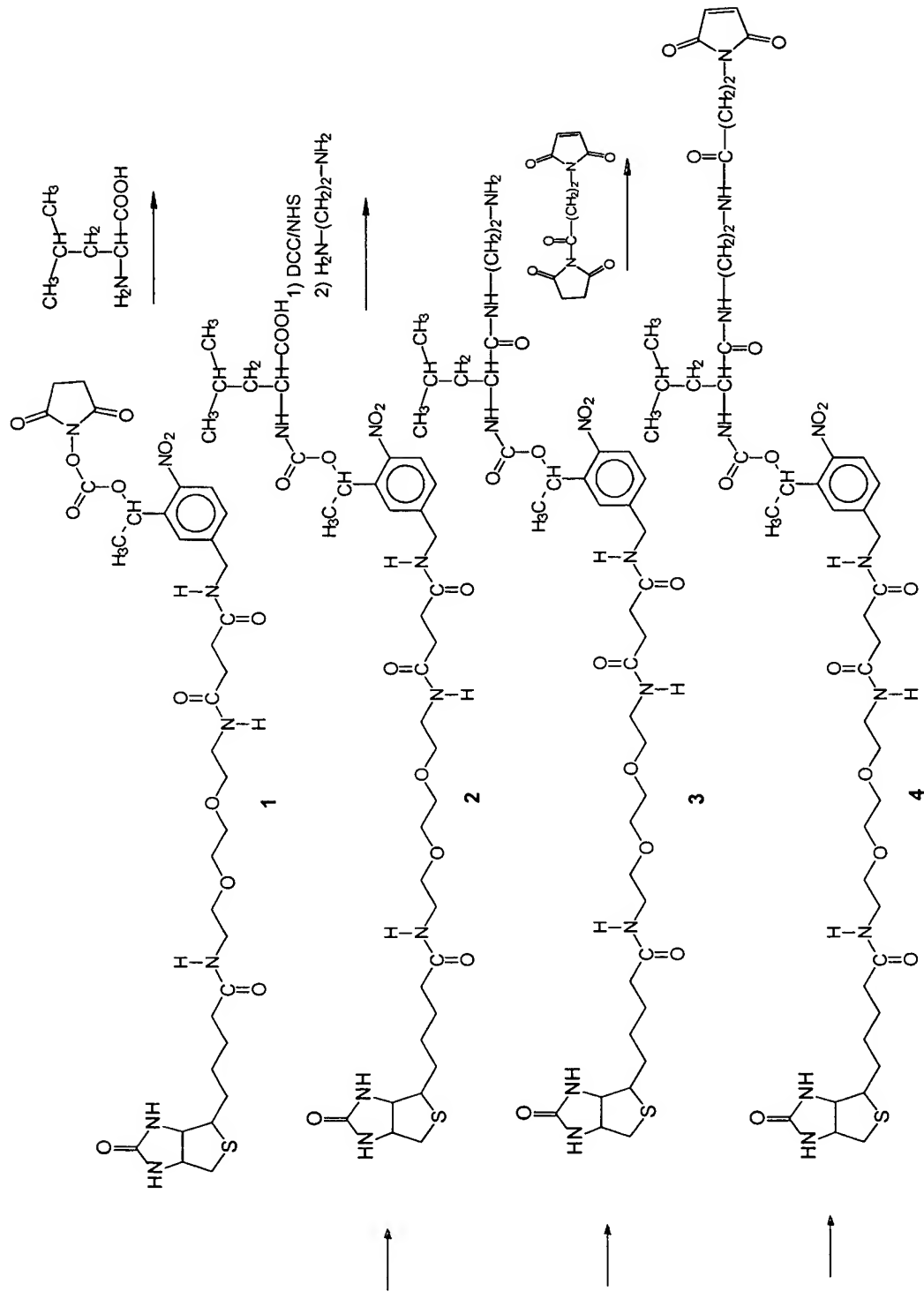
**Figure 14A**



**Figure 14B**

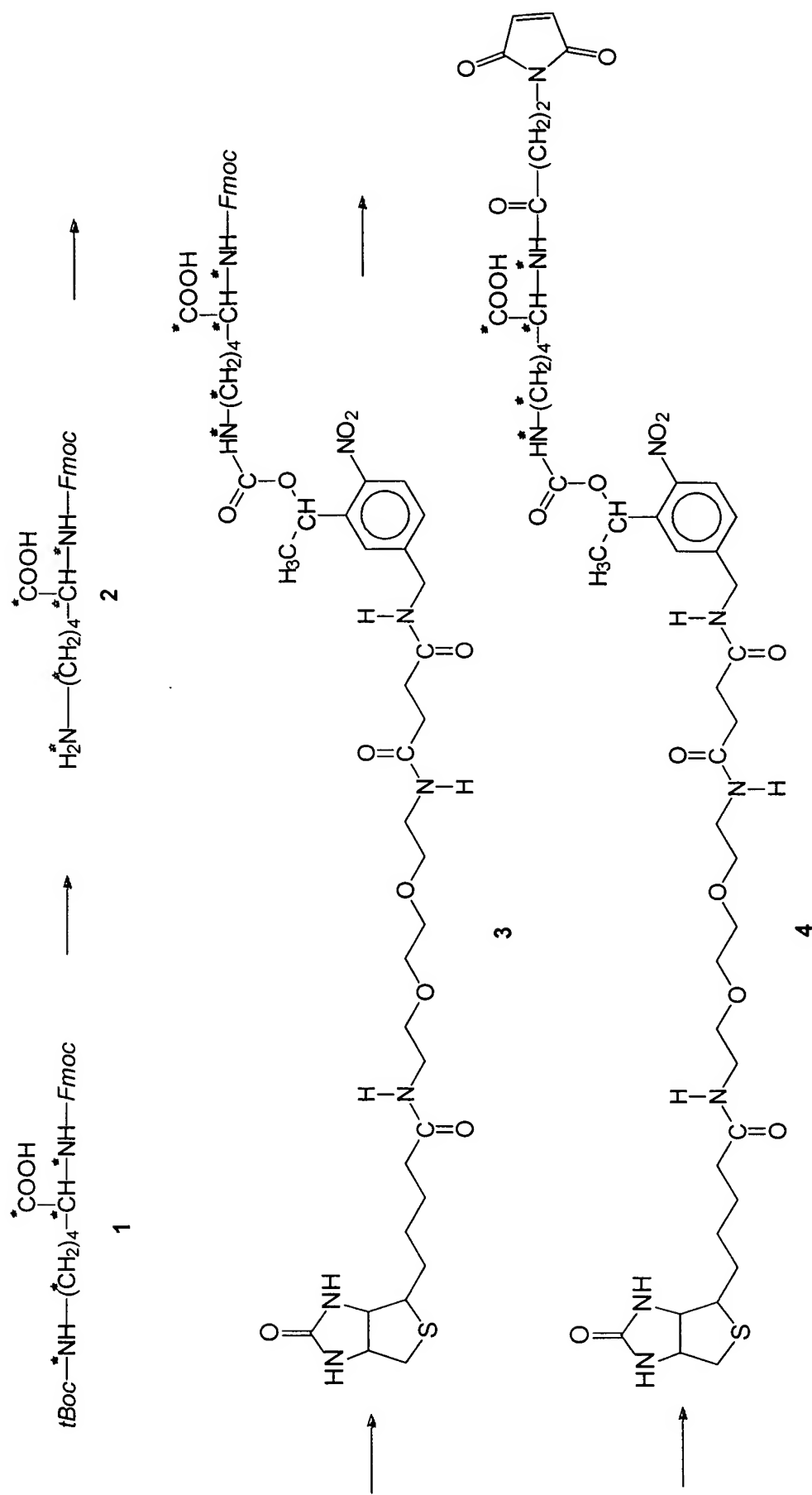


**Figure 14C**

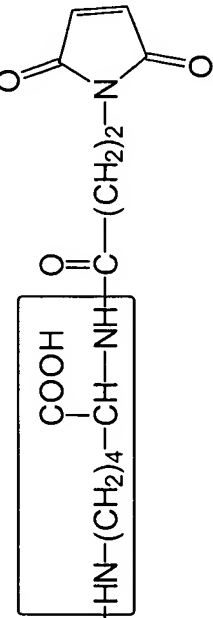
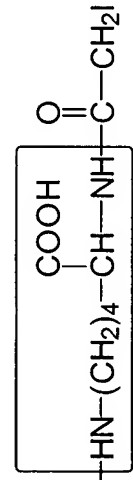
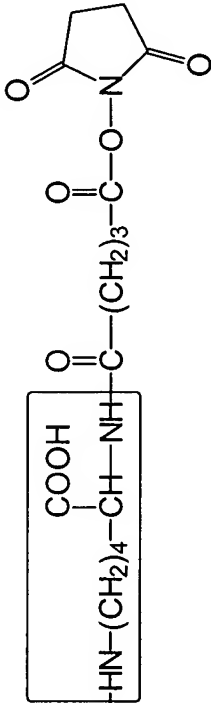




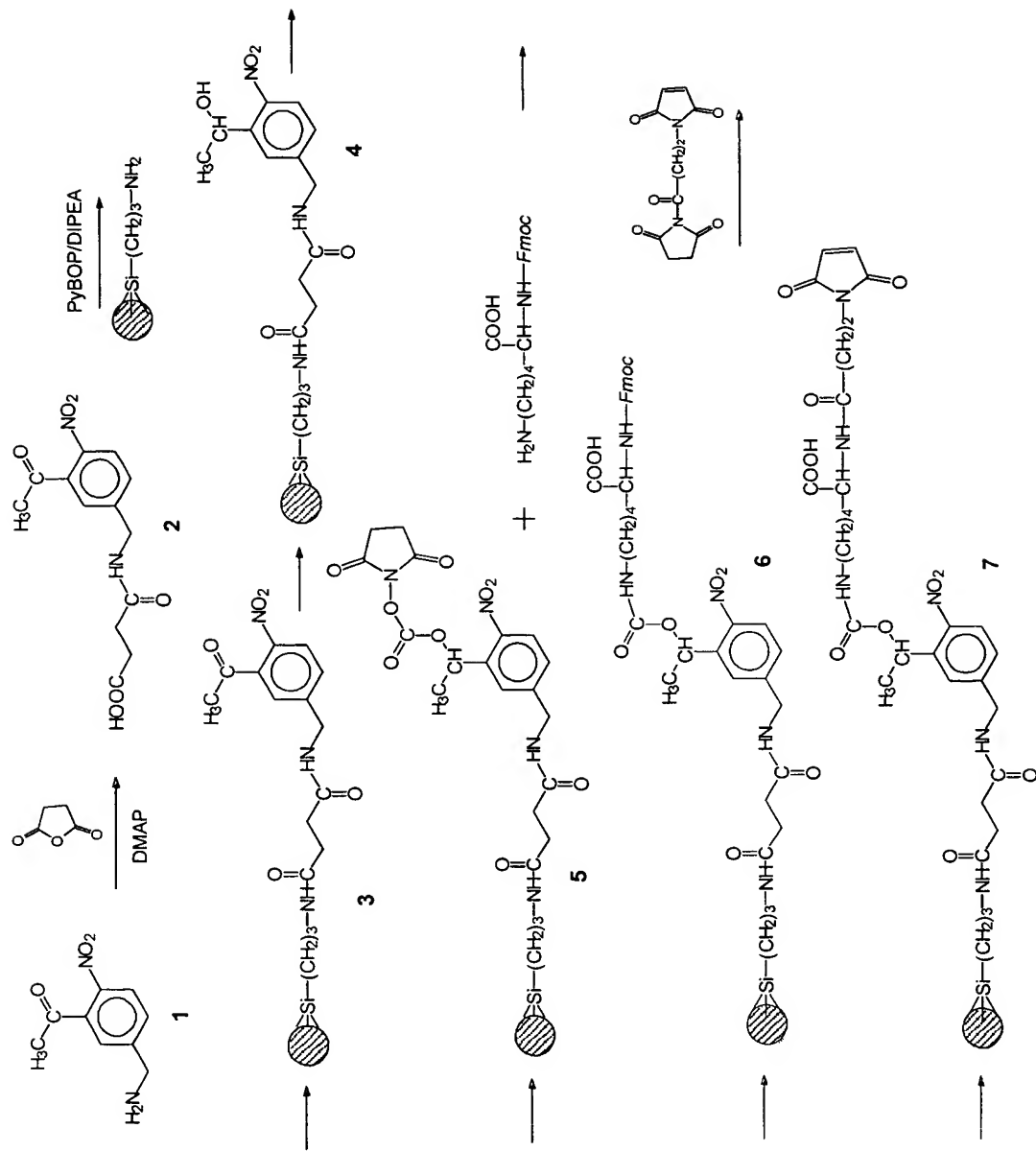
## Figure 14D



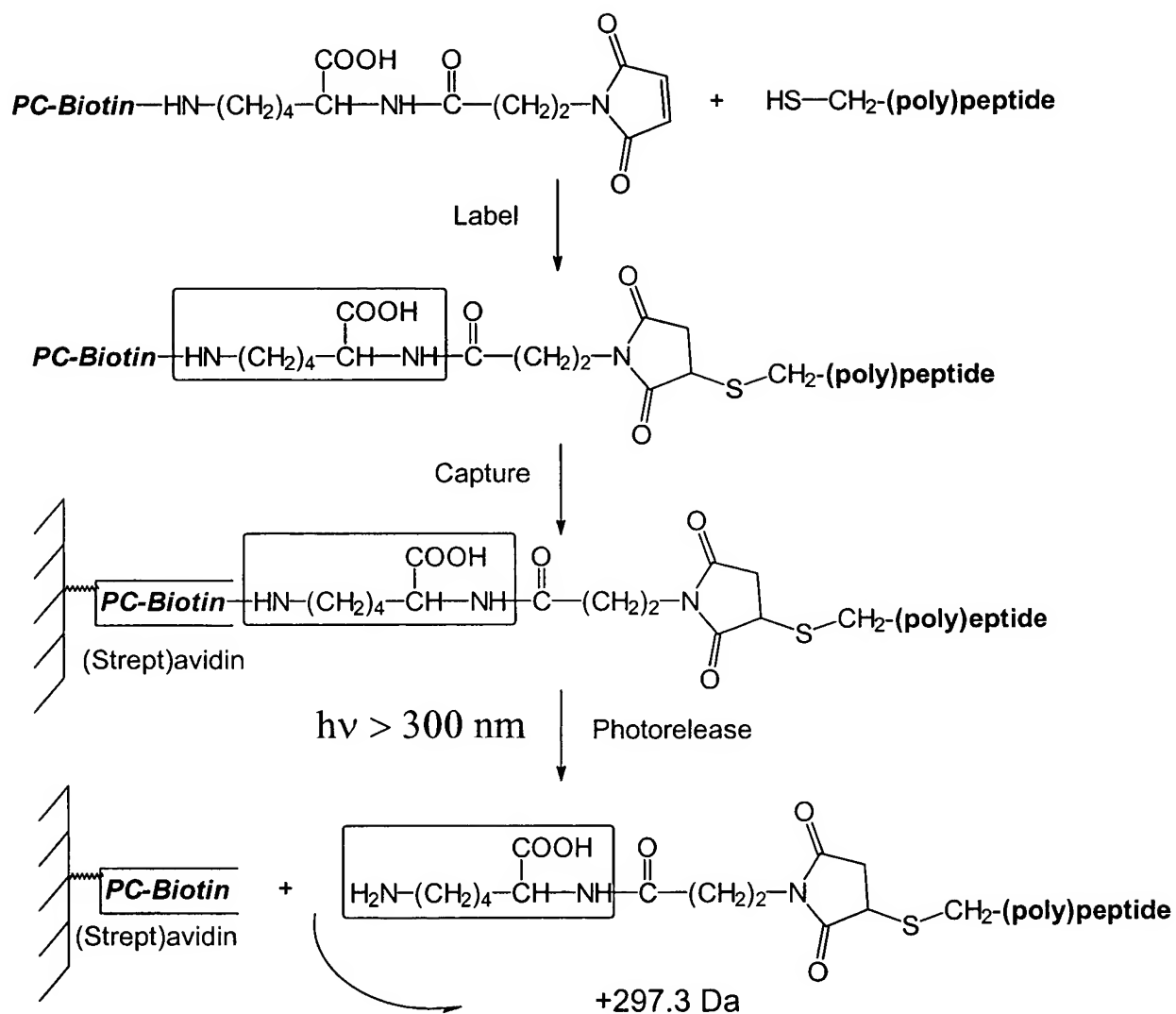
**Figure 14E**

PC-ICAT Reagent	Reactive Group (Reactivity)	Mass change (after cleavage)
<div data-bbox="527 1612 578 1818">PC-ICAT #1</div> <div data-bbox="610 1591 649 1738">PC-Biotin</div> <div data-bbox="527 961 737 1575">  </div>	Maleimide (Sulphydryls)	297.3
<div data-bbox="815 1612 865 1818">PC-ICAT #2</div> <div data-bbox="898 1591 937 1738">PC-Biotin</div> <div data-bbox="815 1098 946 1575">  </div>	Iodocetamide (Sulphydryls)	186.2
<div data-bbox="1042 1612 1092 1818">PC-ICAT #3</div> <div data-bbox="1125 1591 1164 1738">PC-Biotin</div> <div data-bbox="1031 877 1240 1575">  </div>	NHS ester (Amines)	242.3

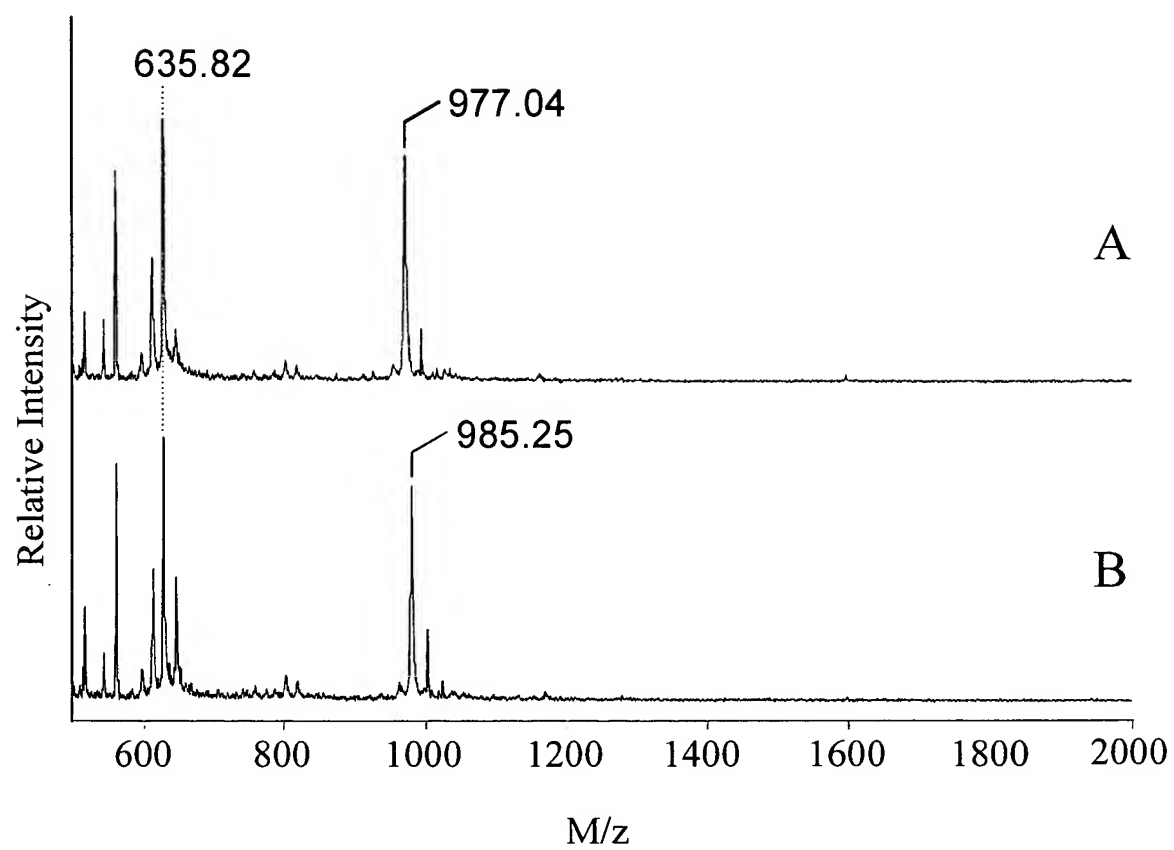
**Figure 14F**



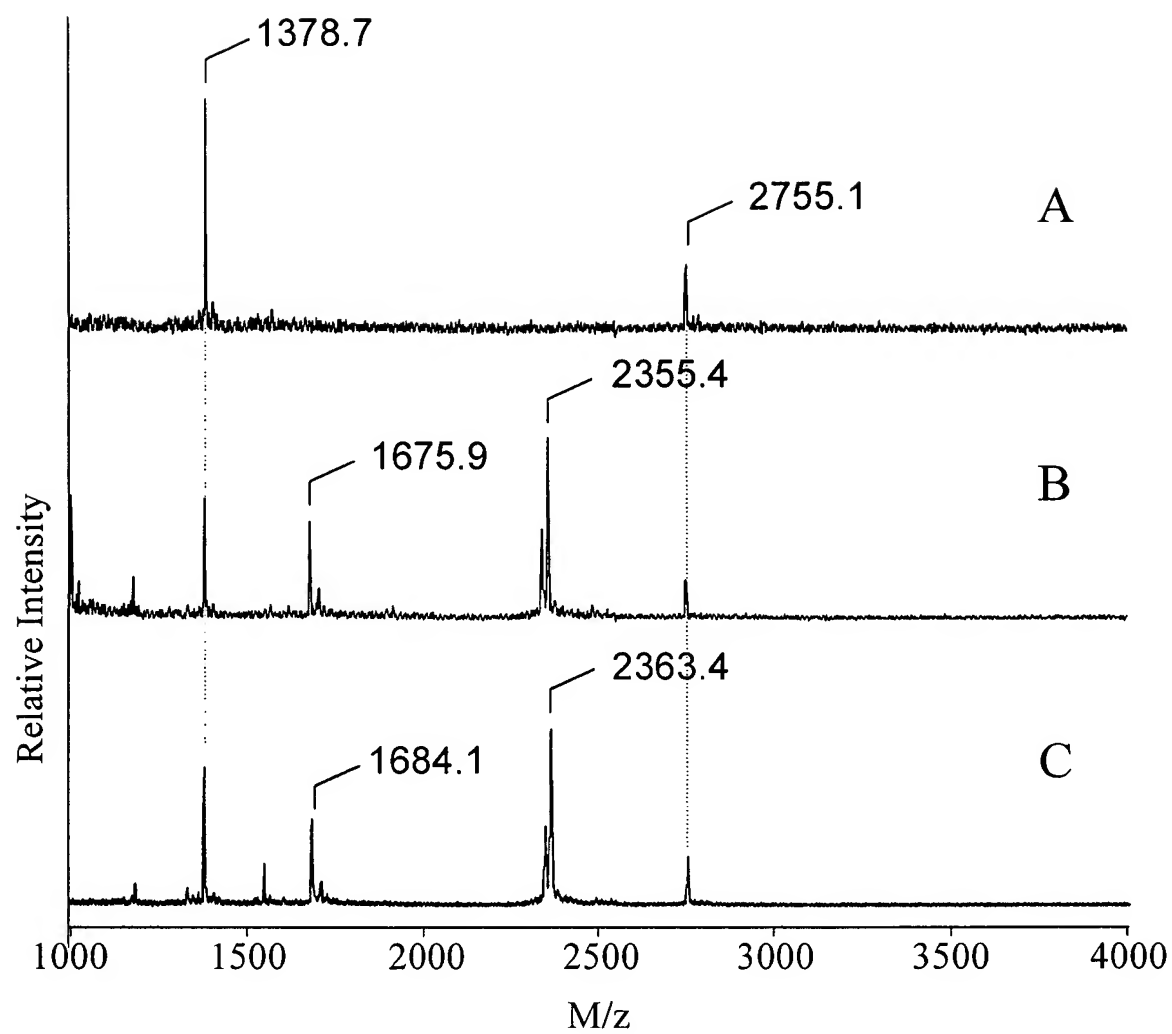
**Figure 15**



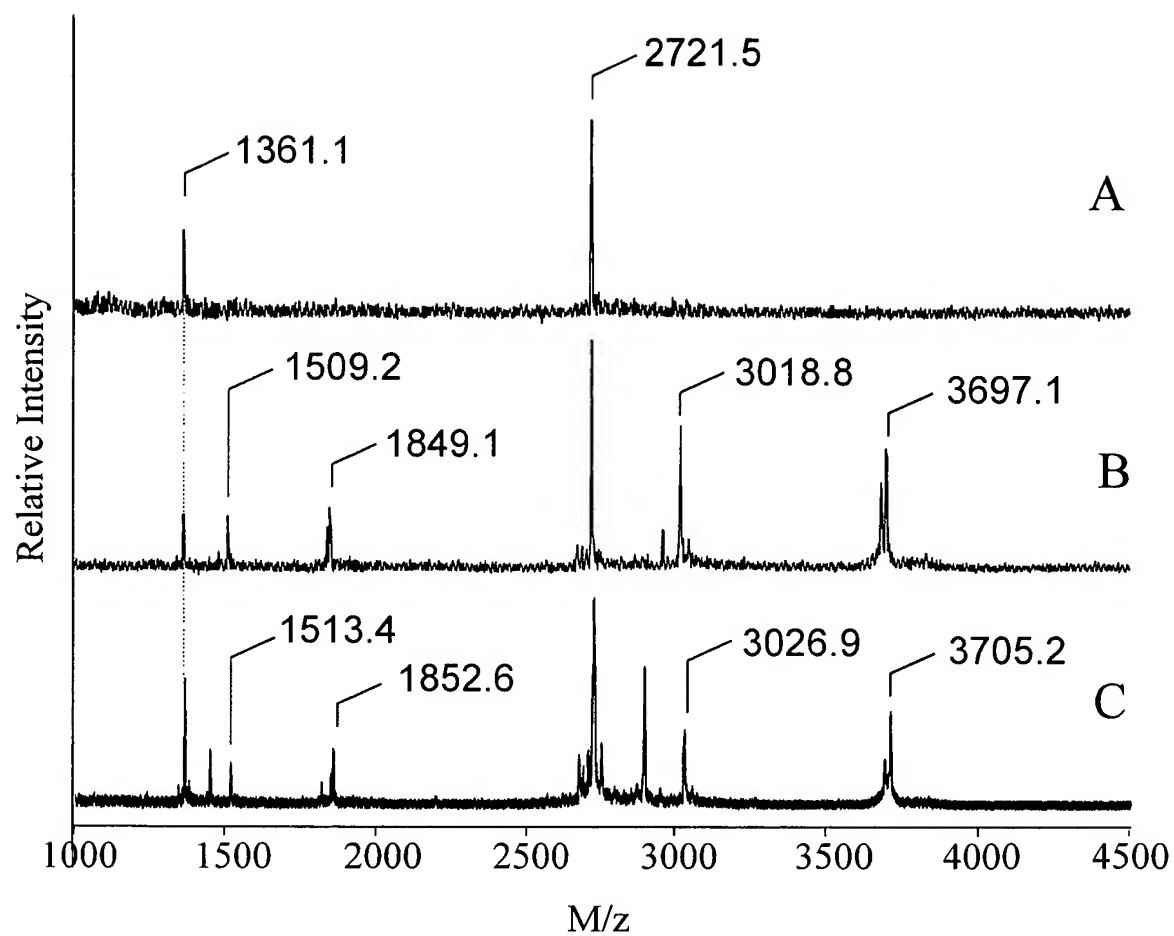
**Figure 16**



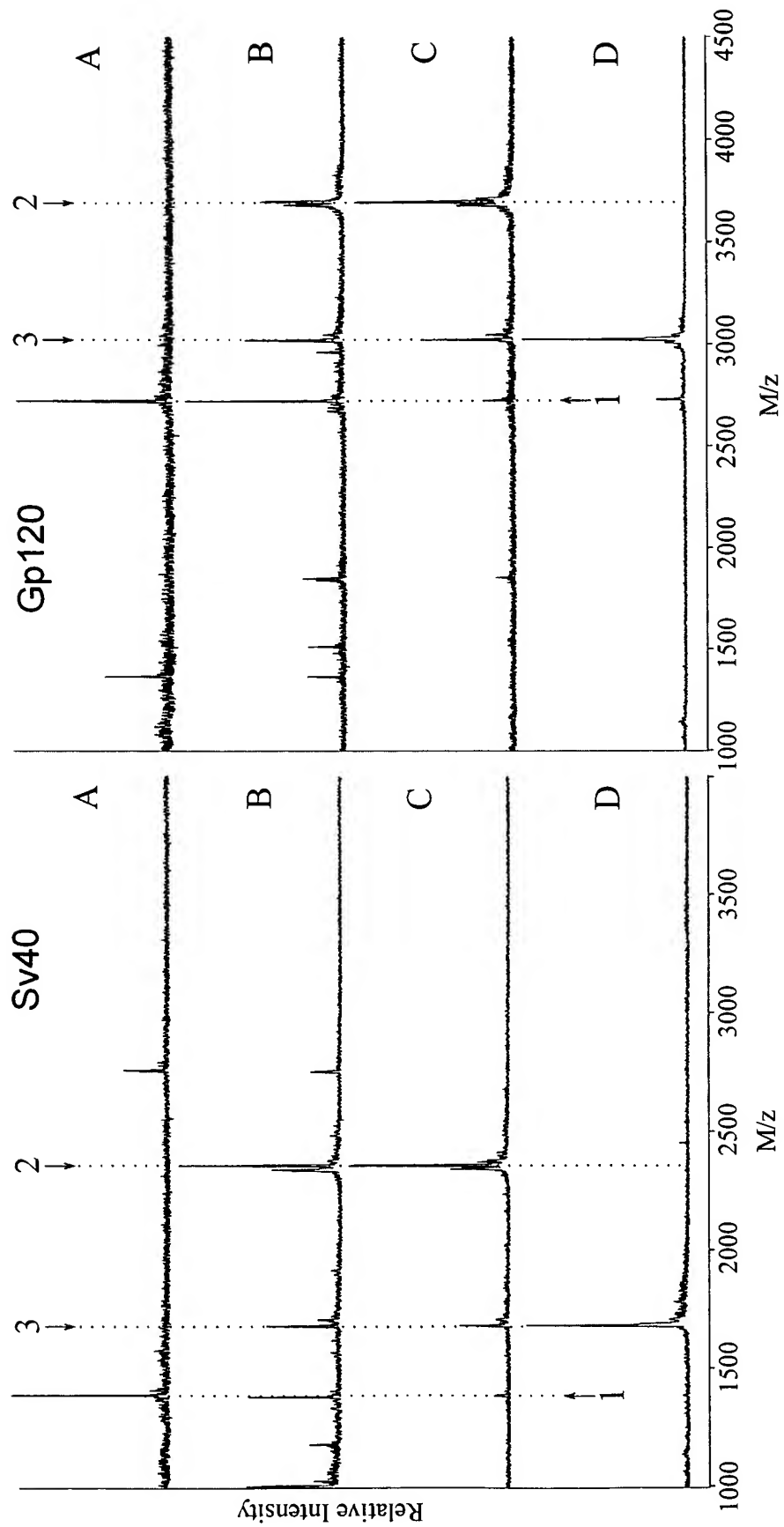
**Figure 17**



**Figure 18**



**Figure 19**

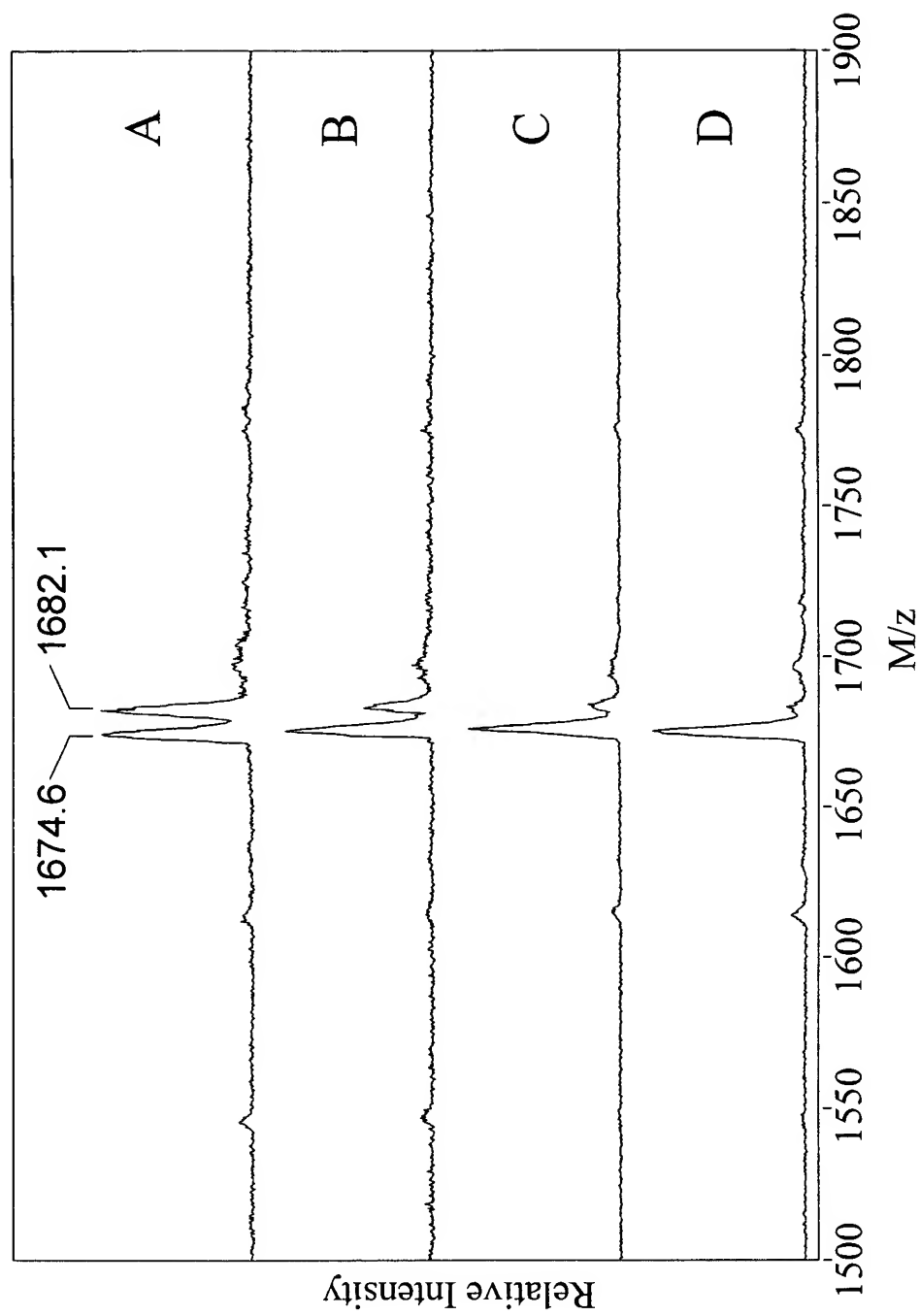




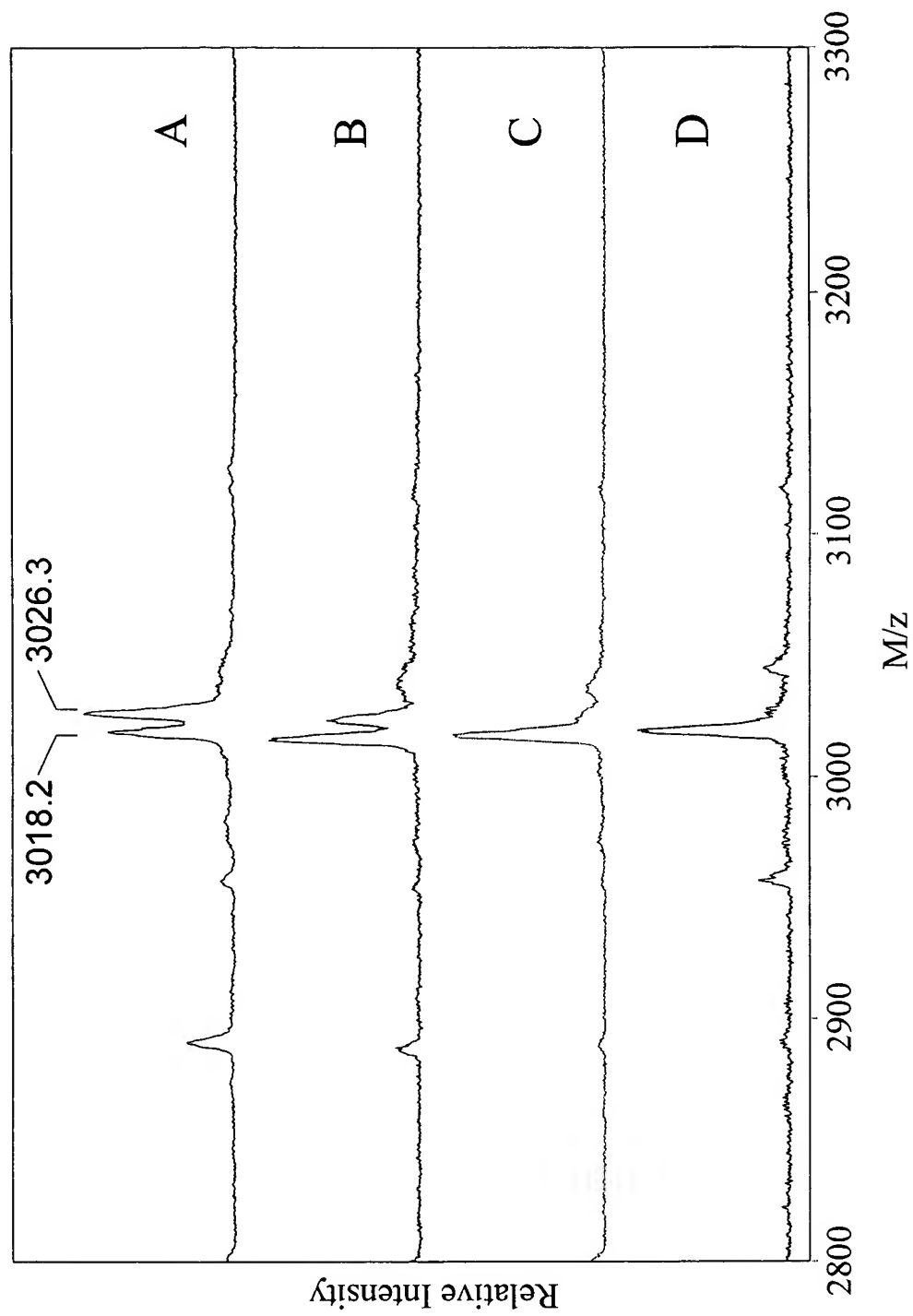
**Figure 20**

Analyte	Mass calculated (MH) <sup>+</sup>	Mass measured (solution)	Mass measured (Streptavidin beads)
Reagent PC-ICAT#1	976.41 (uncleaved); 635.28 (cleaved)	976.94; 635.66	N/a
SV-40 peptide analog	1378.69; 2755.38 (homodimer)	2755.06 (homodimer); 1378.74;	N/a
SV-40 peptide analog+ PC-ICAT#1	2355.1 (uncleaved); 1676.0 (cleaved)	2755.53 (homodimer) 2355.36; 1675.98; 1378.36	Streptavidin beads: 2355.45; 1676.33; Photocleaved/supernatant: 1676.23
HIV gp120 peptide	2721.30	2721.52; 1361.14 (MH <sub>2</sub> ) <sup>+2</sup>	N/a
HIV gp120 peptide + PC-ICAT#1	3697.71 (uncleaved) 3018.61 (cleaved)	3697.09; 3018.82; 2721.45; 1849.13 (uncleaved (MH <sub>2</sub> ) <sup>2+</sup> ); 1509.18 (cleaved, MH <sub>2</sub> ) <sup>2+</sup> ); 1360.88 (MH <sub>2</sub> ) <sup>+2</sup>	Streptavidin beads: 3697.13; 3018.62; Cleaved/supernatant: 3018.89

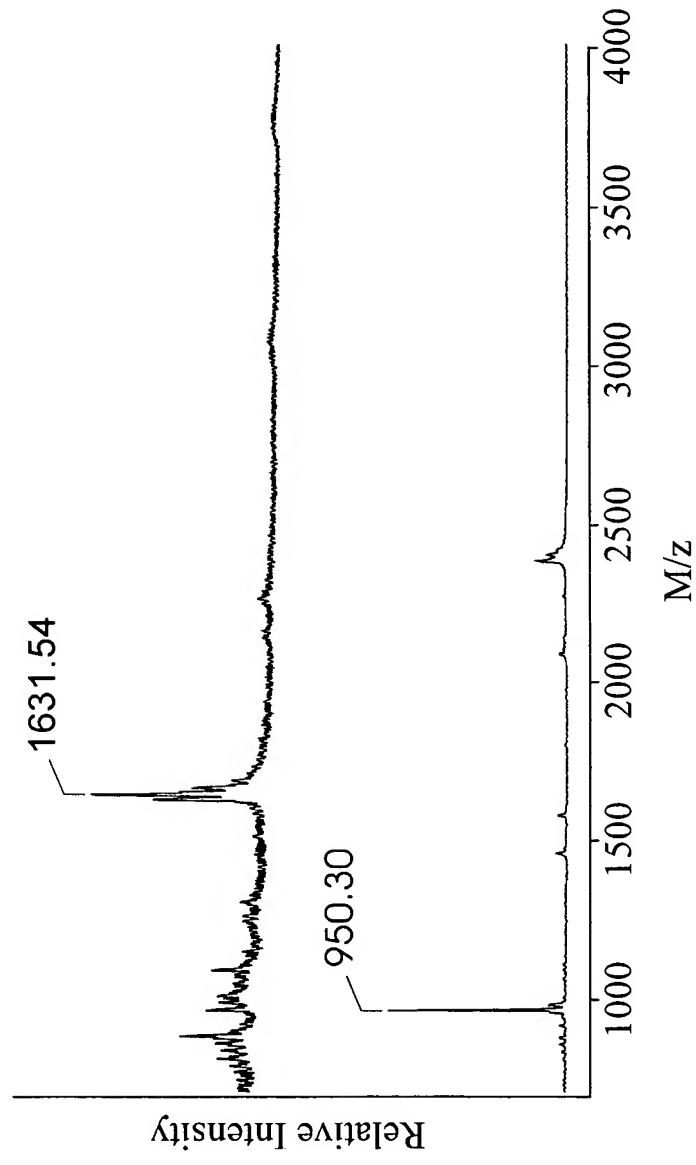
**Figure 21**



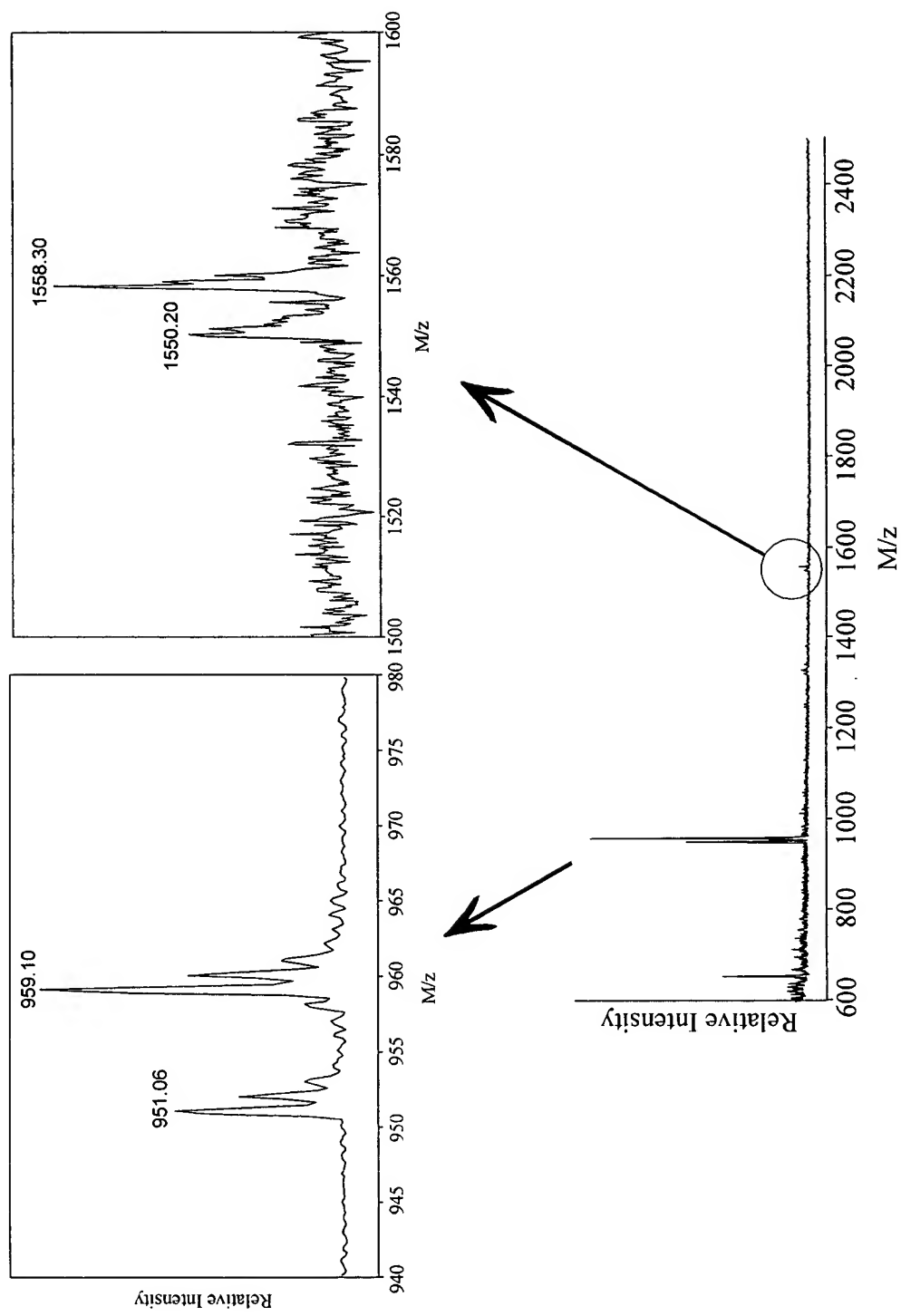
**Figure 22**



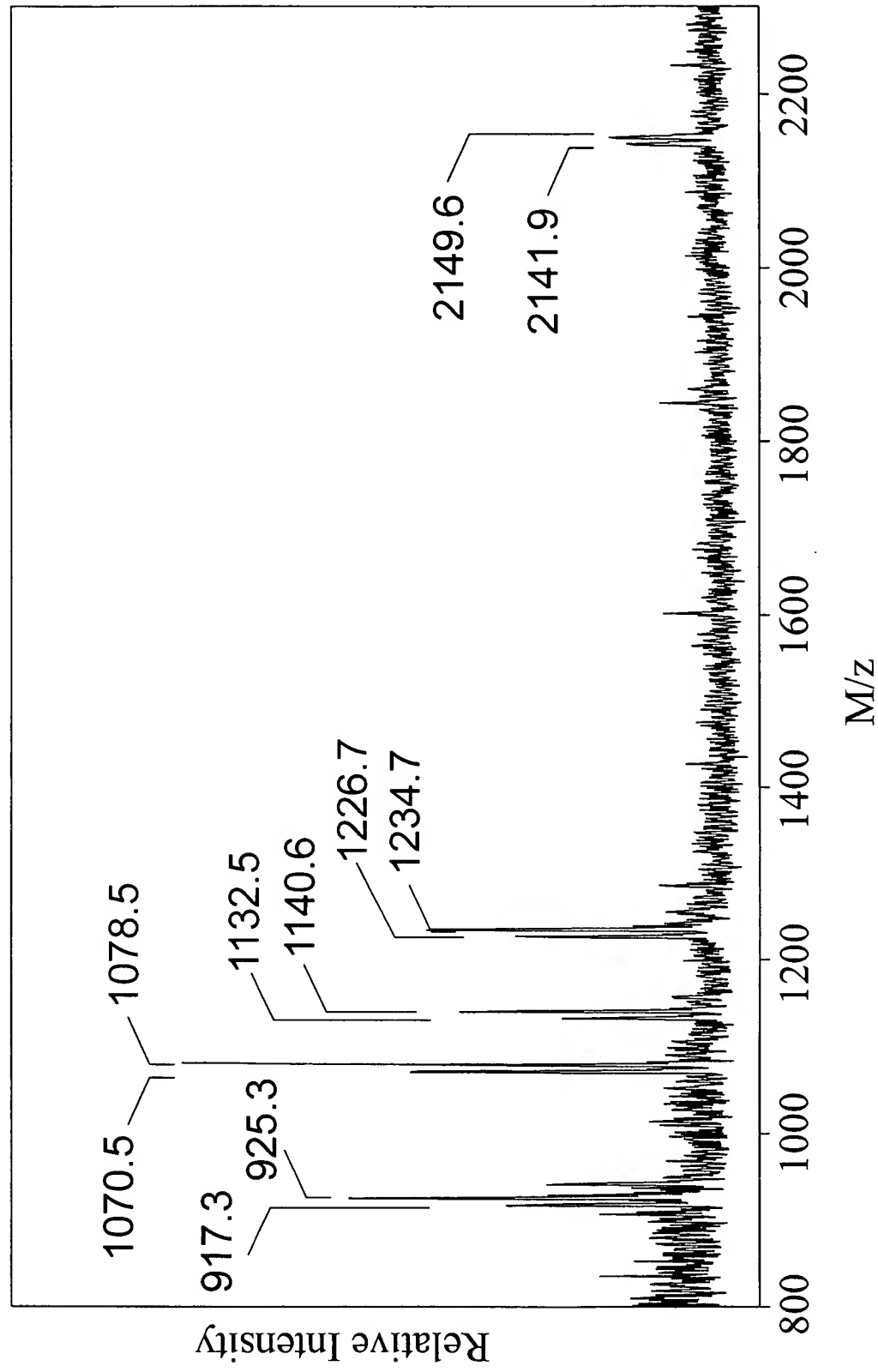
**Figure 23A**



**Figure 23B**

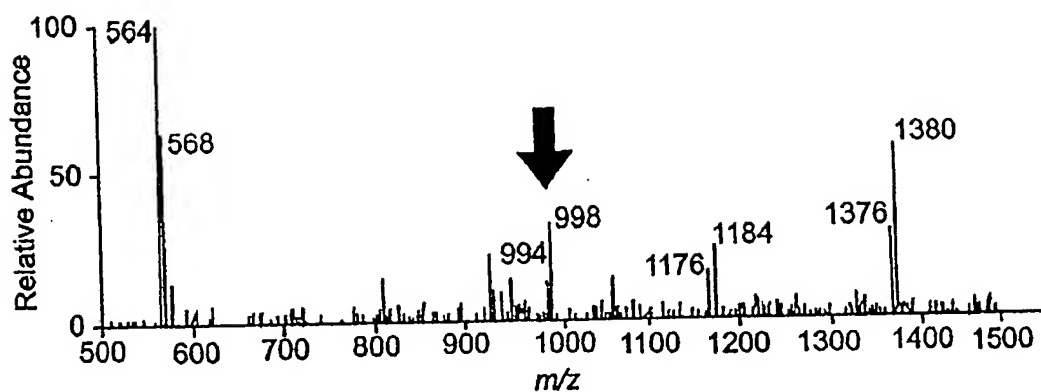


**Figure 24**

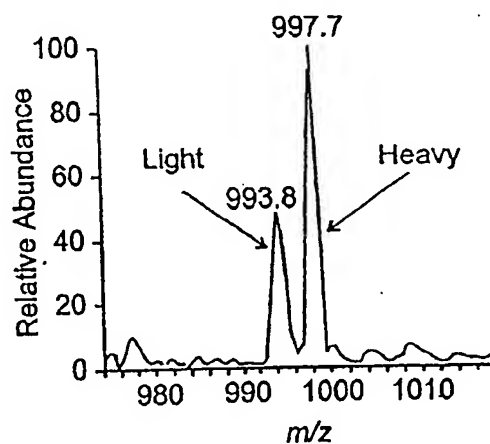


**Figure 25**

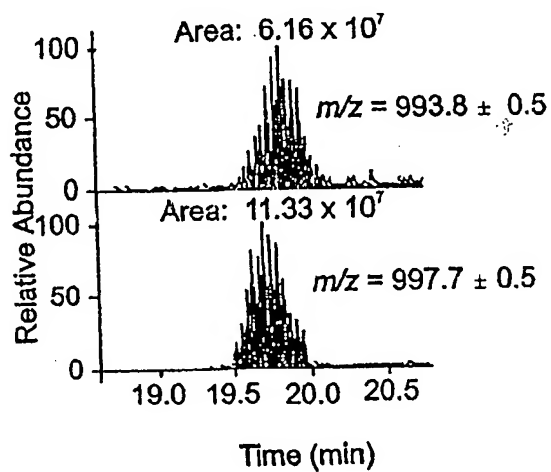
Peptide	H:L ratio (theory)	H:L ratio (experiment)	Standard Deviation	Error, [%]
HIV gp120	1	1.4898	0.126	48.0
	0.50	0.7838	0.038	56.0
	0.20	0.2403	0.004	20.0
	0.10	0.1579	0.043	9.0
SV40	1	1.0593	0.019	6.0
	2	1.9220	0.024	4.0
	5	3.7449	0.362	25.0
	10	5.7204	0.250	56.0



**Figure 26A**



**Figure 26B**



**Figure 26C**



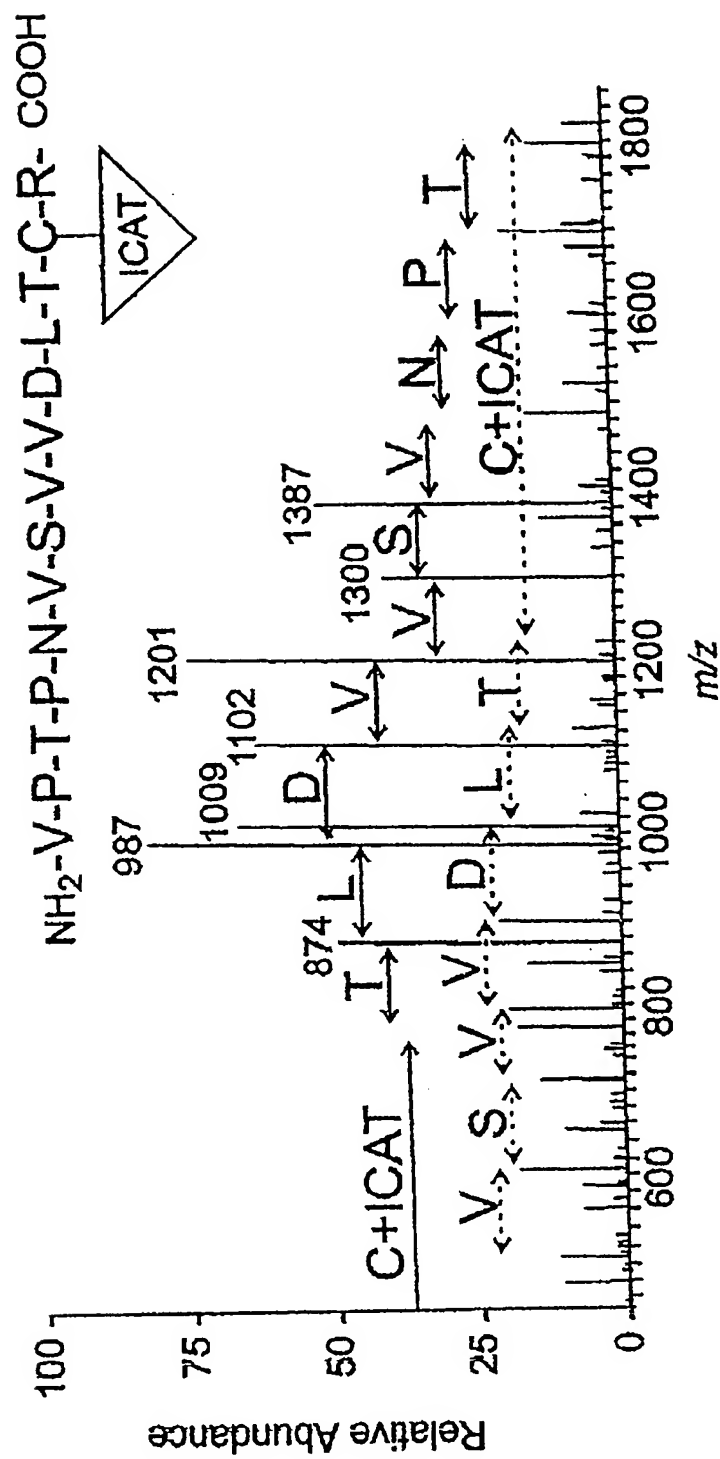
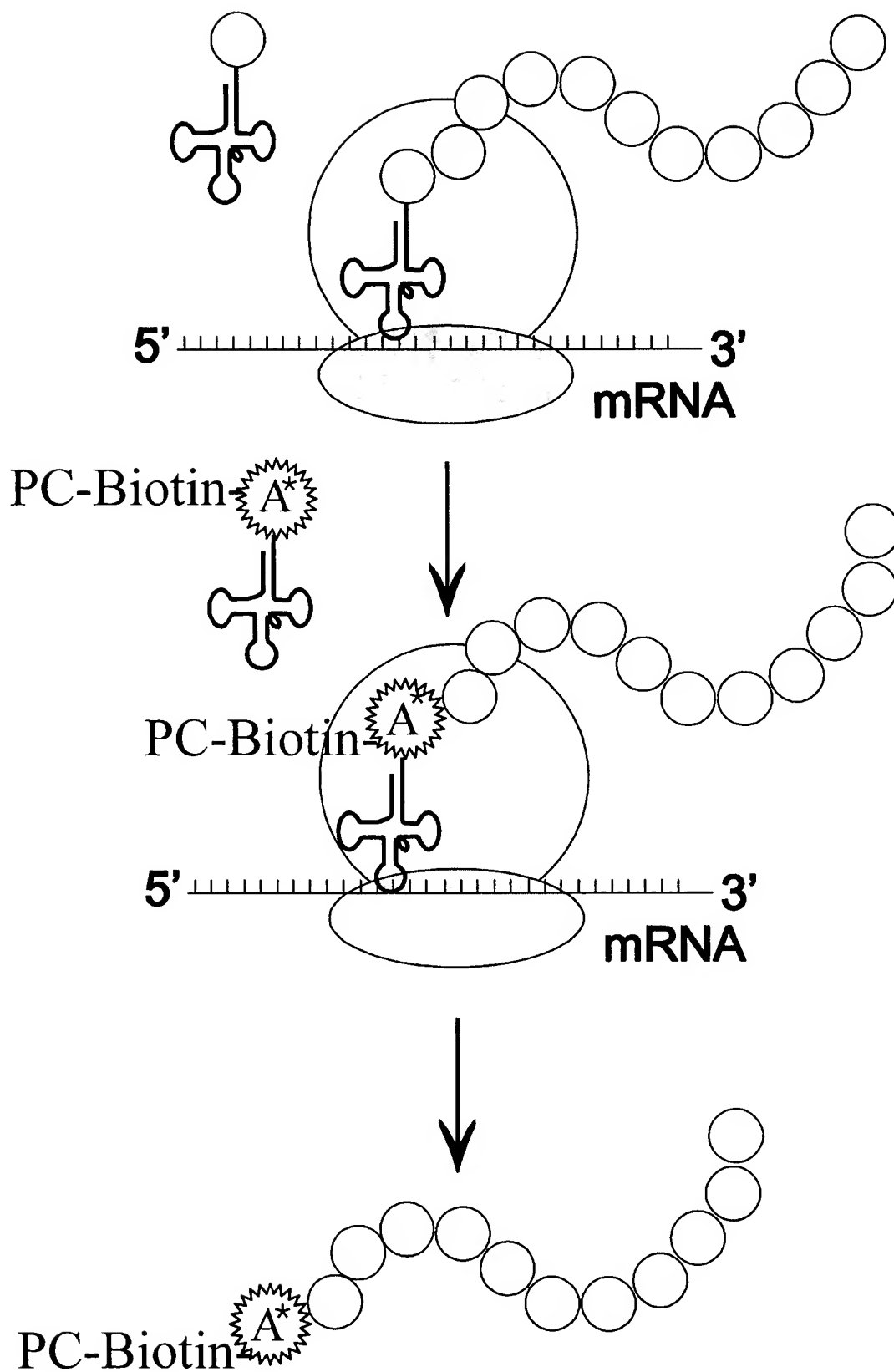


Figure 27A

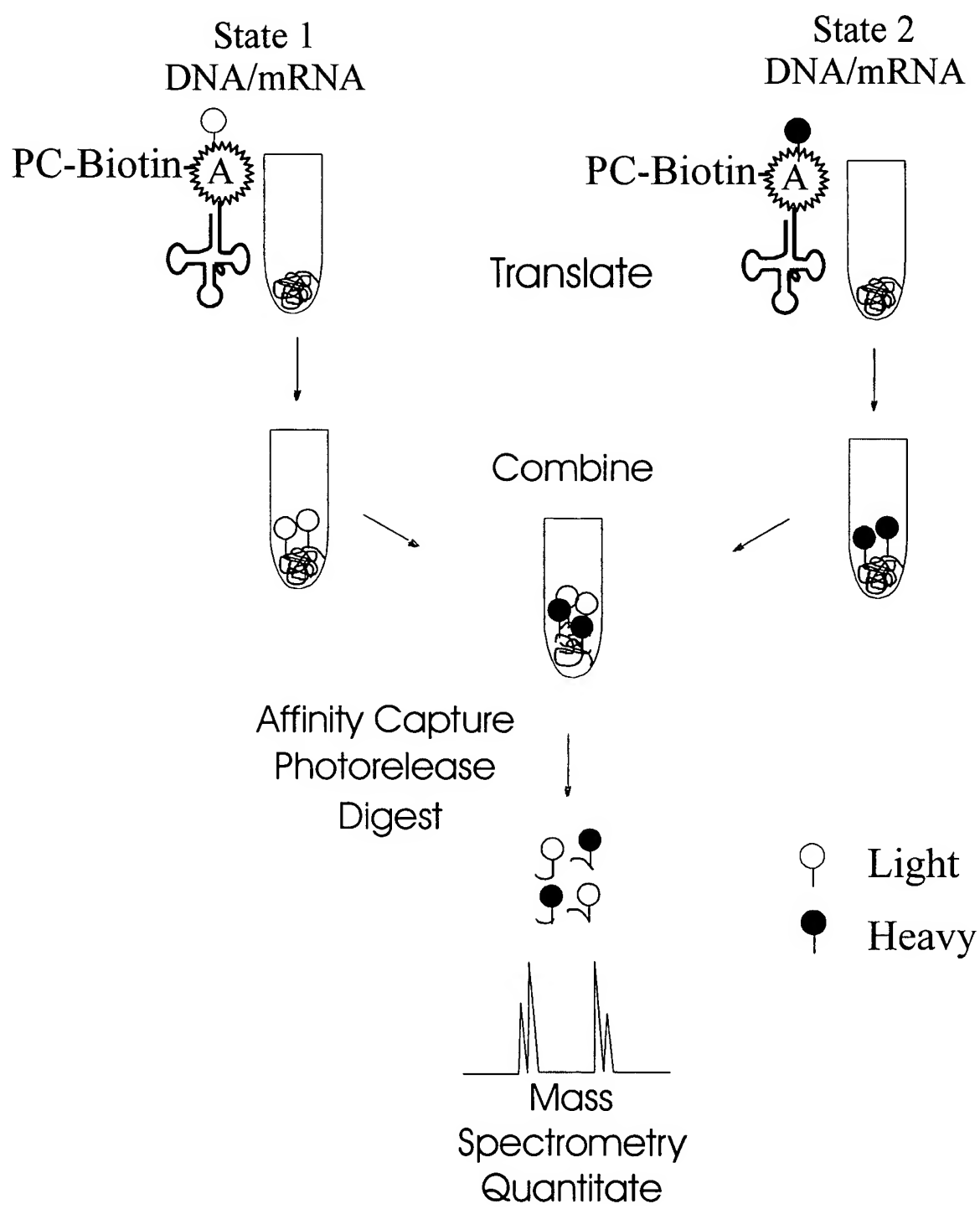
#	Rank/Sp	$\frac{(M+H)^+}{C} \cdot 10^4$	Ions	Reference	Peptide
1.	1/ 1	1994.3 4.4675	17/26	G3P_RABIT	(R)VPTPNVSVVDLTC#R (SEQ ID NO:60)
2.	2/ 403	1995.1 2.7366	13/34	SLTRNGL	(E)LGKPVLTANQVTIWEGLR (SEQ ID NO:61)
3.	3/ 3	1995.0 2.6591	16/36	FLP_LACCA	(N)LANPNVYTETLTAAATVCTI (SEQ ID NO:62)
4.	4/ 209	1995.0 2.6335	14/36	A42912	(Y)LALLPSDAEGPHGQFVTDK (SEQ ID NO:63)
5.	5/ 381	1995.1 2.4634	13/38	H69373	(L)ALLVLVAPAMAAAGNGEDLRN (SEQ ID NO:64)

**Figure 2 7B**

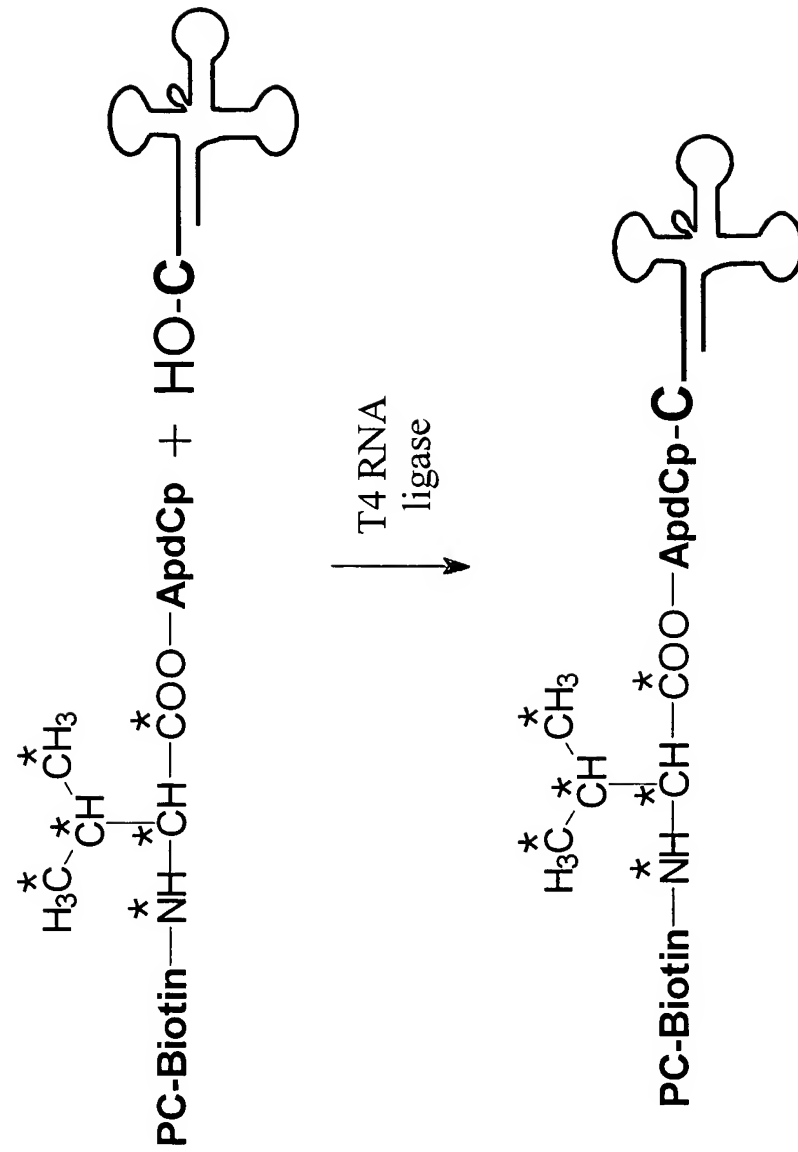
**Figure 28**



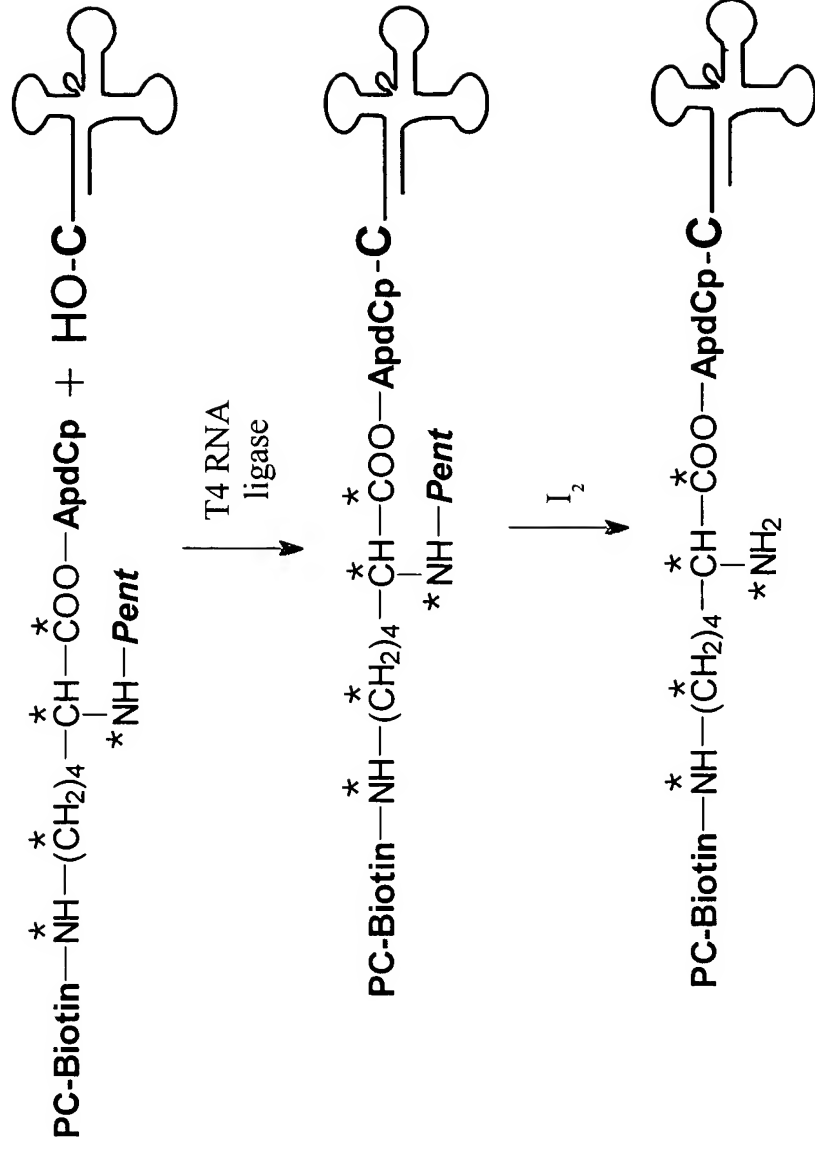
**Figure 29**



**Figure 30**



**Figure 31**



1 2

